THE

JOURNAL OF GAS LIGHTING,

WATER SUPPLY, & SANITARY IMPROVEMENT.

VOL. XVIII. No. 446—21st YEAR.] LONDON, NOVEMBER 23, 1869. [Subscription per Ann. 15s. in Advance 18s. Credit.] DOUBLE No. Price 1s.

RAMSAY'S NEWCASTLE CANNEL COAL. Analysis—
10,000 cubic feet of gas per ton of coal.
26-candle gas.
13¼ cwt. coke per ton of coal.
RAMSAY'S PATENT CONDENSED COKE.
DO. GARESFIELD COKE.

RAMSAY'S FIRE-CLAY ARTICLES.

GAS-RETORTS, introduced 1828.
FIRE-BRICK WORKS, established 1804.
FIRE-CLAY SANITARY PIPES, CHIMNEY-TOPS, and all Goods made of Fire Clay.
The Fire Clay is worked from Blaydon Main Colliery, is of excellent quality, and no expense spared in perfecting every article.
The FIRE-BRICKS (marked "RAMSAY") are to be seen in all parts of the world, and the works are the most extensive in the Kingdom.
Manufactories—Derwenthaugh, Swalwell, and Hebburn Quay, near Newcastle-on-Tyne; and London Wharves—Falcon Wharf, No. 80, Bankside; and Honduras Wharf, Cubit Town. Large stocks kept.
Address G. H. RAMSAY, NEWCASTLE-ON-TYNE.

GEORGE GLOVER & CO.,
Patentees of the Standard Gasometers for the Government, and of the
IMPROVED DRY GAS-METERS.

These Meters are warranted to measure correctly and not to vary, and have come into general use more rapidly than any Meters hitherto manufactured.

PARIS EXHIBITION, 1867.
THE TESTING-HOUSE REPORTS.

The Reports prepared for the Science and Art Department, under the direction of the Lords of the Council, detail the arrangements made for testing the gas apparatus exhibited. In the testing-house erected by the Special Committee appointed to further this object a gasholder was constructed by Mr. G. Glover, being a *fac simile* of that produced and patented by him in 1860, and deposited in the Exchequer, under the provisions of the Sales of Gas Act, and British manufacturers of gas apparatus were invited by advertisement, and by direct application, to forward worthy objects for exhibition. Mr. G. Glover was, however, the only manufacturer who sent Meters to be tested. The report states that, as "Mr. Glover is a manufacturer of Dry Meters only, no opportunity presented itself of comparing their accuracy with that of Wet Meters under various circumstances, but the perfection to which that maker has brought his Meters prevents the possibility of those extravagant errors which are well known to exist where Wet Meters are used."
Particulars and lists of prices forwarded on application to Ranelagh Works, Ranelagh Road, Pimlico, LONDON, S.W.; 15, Market Street, MANCHESTER; or 97, Boulevard de Magenta, PARIS.

COWEN'S PATENT FIRE-CLAY RETORTS.
JOSEPH COWEN and CO.,
BLAYDON BURN, NEAR NEWCASTLE-ON-TYNE,
Were the only parties to whom a PRIZE MEDAL was awarded at the GREAT EXHIBITION of 1851, for "GAS RETORTS and OTHER OBJECTS in FIRE-CLAY," and they have also been awarded in the INTERNATIONAL EXHIBITION of 1862, the PRIZE MEDAL for "GAS RETORTS, FIRE-BRICKS, &c., for EXCELLENCE of QUALITY."
J. C. and Co. have been for many years the most extensive Manufacturers of Fire-Clay Retorts in the United Kingdom; and orders for Fire-Clay Retorts of all shapes and dimensions, Fire-Bricks, and every other article in Fire-Clay are promptly executed at their Works as above.
COWEN'S GARESFIELD COALS.
Coal Office,
QUAY SIDE, NEWCASTLE-ON-TYNE.

FIRST PRIZE IN THE PARIS EXHIBITION.
JOHN RUSSELL AND CO.,
THE OLD TUBE WORKS,
CHURCH HILL, WEDNESBURY;
ALMA WORKS,
WALSALL, STAFFORDSHIRE;
and 69, UPPER THAMES STREET, LONDON,
Original Manufacturers of Wrought-Iron Gas Tubes and Holders of the present Patents; Inventors and First Makers of LAP-WELDED FLUES for Steam Boilers.
J. R. and Co. make all kinds of Tubes and Fittings for Gas, Steam, and Water, and the largest Orders may be executed in a few days.
Gun Metal, and all other kinds of Cocks, Stocks, Dies, and Taps, Galvanised Tubes, &c.
N.B. All Goods thoroughly Tested before sent out, and Warranted.

JOHN BENT & SON,
WET AND DRY GAS-METER
AND
STREET-LAMP
MANUFACTURERS,
BELL BARN ROAD, BIRMINGHAM.
ESTABLISHED 1830.
All materials found for the alteration of Public Lamps for lighting with the Rod. Regulators with Lava Burners.

BLAYDON BURN AND LOW BENWELL FIRE-CLAY RETORT AND FIRE-BRICK WORKS, NEAR NEWCASTLE-ON-TYNE.
WILLIAM COCHRAN CARR begs most respectfully to thank the Metropolitan, Provincial, and Continental Gas Companies for their patronage for several years past, and to intimate that he has rebuilt and enlarged his extensive premises for the manufacture of CLAY RETORTS; and that he is now prepared to execute the largest orders with punctuality and despatch. Orders for FIRE-CLAY RETORTS, of all shapes and sizes, FIRE-BRICKS, and all other articles in Fire-Clay, executed on the shortest notice, and on the most reasonable terms.
London Agents: JAMES LAWRIE & CO., 63, OLD BROAD STREET, CITY, LONDON.

THE "LOTHIAN" CANNEL COALS.
These Cannels are extensively used in the Gas-Works of Edinburgh, where the illuminating power of the gas is the highest in Britain.
The yield per ton is **12,573** cubic feet; illuminating power 33·8 standard candles; coke per ton 1046 lbs.
Ports of Shipment, in the Firth of Forth.

BO'NESS CANNEL COALS.—This Cannel is largely used in gas-works where, in addition to high illuminating power, there exists a demand for superior Coke, it being the best Coke-producing Cannel of all Scottish Cannels. It yields about **11,000** cubic ft. of 25 standard candle gas per ton.
Ports of Shipment, either the Forth or the Clyde.
Apply to J. and W. ROMANS, 53, Frederick Street, EDINBURGH; & 1, Walbrook, Mansion House, LONDON.

NOTICE.
LESMAHAGO GAS OR CANNEL COAL.
JAMES FERGUSON & CO., Auchinheath COLLIERY, LESMAHAGO, and the NITSHILL & LESMAHAGO COAL COMPANY, AUCHINHEATH AND SOUTHFIELD COLLIERIES, LESMAHAGO, sole Proprietors and Producers of the above celebrated GAS COAL, beg to intimate to Gas Companies and other consumers that, having reason to suspect that Cannel or other Coal of very inferior quality, both as regards the quantity and illuminating power of the Gas, has frequently been mixed with and sold under the name of "Lesmahago," they have now appointed Messrs. JAMES LAWRIE & Co., of 63, Old Broad Street, LONDON, E.C., sole agents for England; and Messrs. LA COUR & WATSON, of LEITH, sole agents for foreign markets; and, in order to prevent a recurrence of the frauds named, they request that all purchasers will send their orders through the above-named firms. Orders for other than the above-named markets may be forwarded direct to either of the Proprietors.
The Proprietors will, in future, use their own forms of bills of lading, and also issue certificates of origin, signed, as the case may be, either by JAMES FERGUSON & Co., or by the NITSHILL & LESMAHAGO COAL COMPANY; and they request all consumers purchasing Lesmahago Coal to demand such a certificate for each cargo, and to observe that it corresponds with the bill of lading.
Auchinheath, Lesmahago, March, 1868.

MEDAL AWARDED, EXHIBITION, 1862, "FOR GOOD WORK."
THE IMPERIAL TUBE COMPANY, BIRMINGHAM,
MANUFACTURERS OF
WROUGHT-IRON TUBES & FITTINGS, BRASS & COPPER TUBES,
GALVANIZED & GLASS ENAMELLED TUBES & FITTINGS,
LAP-WELDED IRON & BRASS BOILER-TUBES, ETC., ETC.
☞ Sole Makers of "HUGHES'S PATENT TAPS," Strongly recommended for all High-pressure purposes.—Price List and Testimonials forwarded on application.

CROLL'S DRY GAS-METER,
PRIZE MEDALS. (INVENTED & PATENTED IN 1844,) PRIZE MEDALS.
LONDON, 1851; NEW YORK, 1853; PARIS, 1855. COMBINING ALL THE LATEST IMPROVEMENTS, LONDON, 1862; DUBLIN, 1865; PARIS, 1867.
MANUFACTURED ONLY BY
THE GAS-METER COMPANY, LIMITED.
238, KINGSLAND ROAD, LONDON, N.E.
A. ANGUS CROLL, C.E., Chairman. GEORGE RAIT, Managing Director.

HENRY HOWARD & CO.,

COOMBS WOOD PATENT TUBE-WORKS,

OLD HILL, near DUDLEY,

MANUFACTURERS OF

PATENT WELDED WROUGHT-IRON TUBES & FITTINGS,

FOR GAS, STEAM, & WATER, EITHER BLACK, GALVANIZED, OR ENAMELLED.

CORE BARS for IRONFOUNDERS, STOCKS, TAPS, & DIES, IRON COCKS, &c.

London Agents { W. G. DAVIS, 2, Brabant Court, Philpot Lane, E.C.
J. R. HILL, 73, Hatton Garden, E.C.

JOHN HALL & CO.,

STOURBRIDGE,

MANUFACTURERS of FIRE-BRICKS, LUMPS, & TILES,

AND EVERY DESCRIPTION OF FIRE-CLAY GOODS.

N.B.—A Stock of 15 and 16 in. CIRCULAR RETORTS always on hand. Other kinds made to order on short notice.

SILVER MEDAL, PARIS EXHIBITION, 1867.

LLOYD AND LLOYD,

ALBION TUBE-WORKS, BIRMINGHAM,

MANUFACTURERS OF

WROUGHT-IRON TUBES AND FITTINGS

For Gas, Steam, Water, &c.

SOLE LICENSEES for the United Kingdom for the LAVENANT PATENT ENAMELLED TUBES & FITTINGS,

the Coating of which does not shell off, is a certain preservative from rust, and resists all effects of expansion and contraction.

LAP-WELDED IRON & HOMOGENEOUS METAL TUBES

For Locomotive, Marine, and Stationary Boilers.

Boiler-Tube Ferrules, Gun-Metal Gland Cocks, Water-Gauges, Whistles, &c.; Stocks, Taps, and Dies for Screwing, and Gas-Fitters Tools of all kinds.

London Offices: No. 4, Cloak Lane, Queen Street, E.C.

WAREHOUSES:

LONDON: No. 157, Upper Thames Street, E.C. LIVERPOOL: No. 4, Cooper's Row, and 3, Crooked Lane, Strand Street.
MANCHESTER: Barlow's Croft, Chapel Street, Salford. PARIS and LILLE.

BEST AND HOLDEN'S

PATENTS FOR CHARGING AND DRAWING GAS-RETORTS,

WITH CHAMBERS FOR MOUTHS,

REQUIRING NO LUTING.

Gas Engineers are solicited to examine into the merits of this invention before erecting new or altering old retort-houses. It may be seen in action at the Alliance Gas Company's Works, Dublin, where its utility and economy will be clearly demonstrated. Although the saving in labour will be considerable, and quickly return any outlay of capital, there are other and important features strongly recommending its adoption at all gas-works, and which a gas engineer upon examination will at once appreciate.

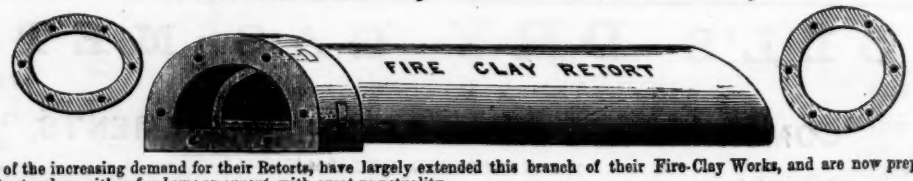
The Directors of the Alliance Gas Company have kindly consented to give every facility to gentlemen desirous of seeing the invention in operation. Parties, therefore, about to visit Dublin will be so good as to send us their card, and we will furnish them with letters of introduction.

Drawings, &c., may be seen at our Office, and all details explained.

JOHN CHISHOLM, SON, & CO., 44, MARK LANE, E.C.

THE FARNLEY IRON COMPANY,

FARNLEY, near LEEDS,



In consequence of the increasing demand for their Retorts, have largely extended this branch of their Fire-Clay Works, and are now prepared to execute the most important orders, either for *home* or *export*, with great punctuality.

The Fire-Clay raised from the Farnley Estate (commonly called the Wortley bed) is unsurpassed by any other known in the district, and is peculiarly well adapted for Retorts, Gas-Ovens, and Fire-Bricks; and the F. I. Co. beg especially to invite those connected with Gas-Works, who have not yet used their Retorts, to be good enough to favour them with a trial.

The F. I. Co. generally hold in stock, for immediate supply, Fire-Bricks of every size and kind—Tiles, Sanitary Tubes, Ornamental Terra-Cotta Ware White Facing Bricks, the White, Buff and Salt-Glazed Bricks, &c., &c.

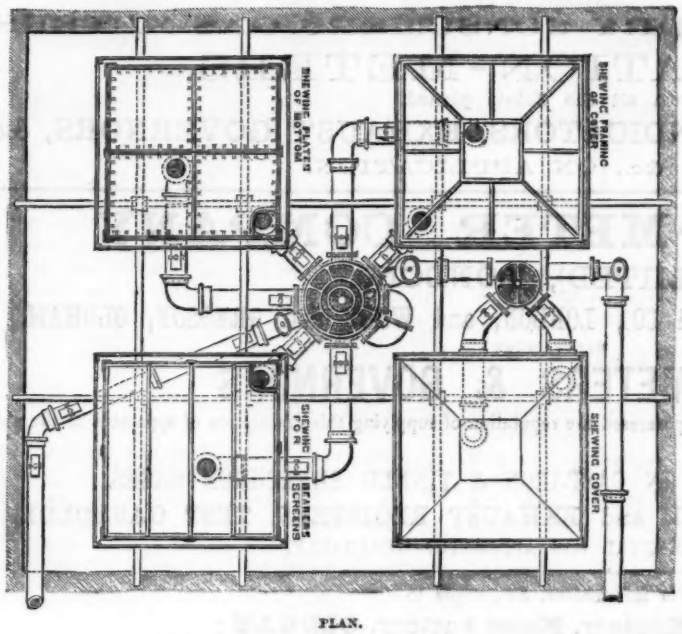
Prices, Drawings, and all other information may be obtained by applying as above, or to

MR. SUTTON, THE HULL STORES, 46½, QUEEN STREET, HULL.

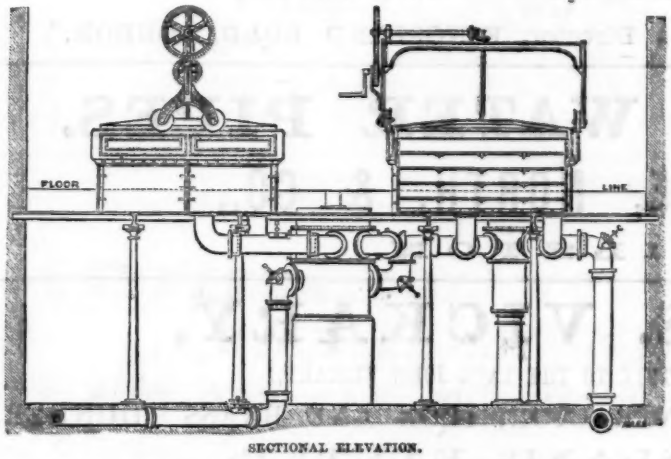
A PLAN & ELEVATION OF GAS PURIFIERS

WITH

COCKEY'S PATENT VALVES.



PLAN.



SECTIONAL ELEVATION.

DESCRIPTION OF PURIFIER ARRANGEMENT.

The plan shows four Purifiers: three of them are worked in rotation by means of a central Valve, so that two are always in use, and the third always out of use for cleaning. By another arrangement of the Valve, either one, two, or three Purifiers may be used together.

The fourth Purifier is used as a guard, with a separate Valve, and is useful in preventing any slightly impure gas, which may have escaped in turning the central Valve, passing in that state to the gasholder.

This system has been found to work well in many gas-works, and in addition to the advantage before stated, it affords a ready and convenient mode of using oxide and lime together for purifying.

By the introduction of a bye-pass, the system is made more perfect, inasmuch as the central Valve, with its connected Purifiers, may be shut off for repair, and the gas passed temporarily direct to the fourth Purifier.

The Valves which are here introduced have now been in use for more than ten years, and have been tested in sizes varying from 3-inch to 16-inch. The increasing demand for them is the best proof which can be given of their satisfactory working and general usefulness.

More than 350 of them have been fixed. They are suited for various parts of gas apparatus, and are especially available for bye-pass connexions. They are also introduced with much advantage for the inlet and outlet connexions of gasholders, and simplify very much the changes where more than one gasholder is in use.

They are durable and easily reground without removal from their connexions, and in a few hours they may be made as good as new after many years wear.

The patentees are prepared to furnish plans, specifications, and estimates, either for the entire construction and erection of gas-works, or for the rearrangement of any part of the apparatus. The Valves are manufactured at the works, at Frome, where also Gasholders, Purifiers, Steam-Engines and Exhausters, Governors, and all other descriptions of Gas Apparatus are made and supplied.

EDWARD COCKEY & SONS.

THE IRON-WORKS, FROME SELWOOD,

March 1, 1869.

GASHOLDER & PURIFIERS FOR SALE.

TO BE SOLD, a Gasholder, 27 ft. diameter by 12 ft. deep, in cast-iron tank, complete, with columns, chains, balance-weights, &c., made by Messrs. Mabon, Manchester; in excellent condition, having only been in use about six years, and standing entirely out of the ground, easily moved; can be seen in use. Also two Purifiers, with divisions, wrought-iron covers, sieves, &c., 7 ft. by 4 ft. by 3 ft., and 6 ft. by 4 ft. by 3 ft., and sundry 5-in. Valves and Connexions.

For particulars apply to A. P. PHILLIPS, ST. ALBANS.

PURIFIERS FOR SALE.

A Set of Four Cast-Iron Purifiers, 8 ft. square, with wrought-iron lids, wrought-iron centre-valve in cast-iron case, wood sieves, connecting-pipes, and lifting apparatus complete, and nearly new.

If preferred, Cockey's patent centre-valve, or cast-iron sieves, in place of above.

For particulars, apply to G. PORTER, Manager, Gas and Water Works, CARLISLE.

SWANSEA, GLAMORGANSHIRE.

IMPORTANT SALE OF SWANSEA GAS SHARES

Under the powers of the Swansea Gas Act, 1861.

MR. J. M. ELLERY begs respectfully to announce that he has been favoured with instructions to

SELL BY AUCTION,

AT THE

MACKWORTH ARMS HOTEL, SWANSEA,

ON FRIDAY, NOVEMBER 26, 1869,

Subject to Conditions of Sale to be then produced, and in such Lots as shall be determined on,

250 NEW SHARES of £25 each,

IN THE

SWANSEA GASLIGHT COMPANY.

These Shares are issued under the authority contained in the 23rd section of "The Swansea Gas Act, 1861," and are offered for sale by public auction in pursuance of the 24th section of that Act, and of a resolution passed at the General Meeting of the Proprietors, held at Swansea on the 22nd of October, 1869.

The Shares will be offered in such lots as to meet the convenience of all classes of investors, whose particular attention is respectfully directed by the Auctioneer to this safe and increasingly profitable property.

Sale to commence at Two o'clock precisely.

Printed particulars may be obtained on application to CHARLES NORTON, Esq., Solicitor, SWANSEA; of the SECRETARY and MANAGER of the Company; or at the AUCTIONEER'S Offices, SWANSEA.

Nov. 1, 1869.

This day (July 10th) is published,

BAILEY'S ILLUSTRATED INVENTIONS, with Illuminated Cover and over 300 Engravings. Price 1s.

This book is replete with information, and prices of many well-known as well as perfectly new inventions, interesting to all in the mechanical trades, as well as corporations, governments, gas managers, private gentlemen, and shopkeepers.

Post free in the United Kingdom, 1s.

JOHN BAILEY and Co., Albion Works, Salford, LANCASHIRE.

"FIVE MINUTES' TALK

ABOUT

GAS"

Is intended to be given by Gas Companies to their Customers. It is hoped the advice it contains may be the means of correcting mistakes and preventing accidents; and also of assisting the Officers in some of the most difficult of their duties.

Price—1000 copies, £1 17s. 6d.; 500 copies, £1 1s. 6d.; any smaller number, at 5s. per 100.

When 1000 copies are ordered, the official title and address of the Company will be printed on the first page without charge. Any greater number by special agreement as to price.

Apply to J. O. N. RUTTER, Black Rock, BRIGHTON.

TO INVENTORS AND PATENTEES.

MR. W. H. BENNETT, having had considerable experience in matters connected with Gas, Water, and Sanitary Improvement, begs to say that he continues to assist Inventors in the perfection of their designs, and to obtain for them PROVISIONAL PROTECTION, whereby their invention may be secured for Six Months; or LETTERS PATENT, which are granted for Fourteen Years.

Patents completed, or proceeded with at any stage, thereby rendering it unnecessary for persons resident in the country to visit London.

Patents procured for Foreign Countries.

Information as to cost, &c., supplied gratuitously upon application to the advertiser, 42, Parliament Street, WESTMINSTER. [Office of the JOURNAL OF GAS LIGHTING, &c.]

CAST-IRON Retorts, Socket-Pipes, with Syphons, and all requisite Connexions, Lamp Columns, Wrought-Iron Tubing, Valves, Street Lamps, Sight Holes, Furnace Doors, Ash Pans, Charging and Coke Shovels, Iron Pails, Coke Barrows, Cross Bars, Fire Pots, Pumps, and Iron Borings.

PURIFIERS, CONDENSERS, and SCRUBBERS erected complete, or the materials supplied; and every description of goods in use by gas-works, in stock, at wholesale prices, at

Mr. LYNCH WHITE'S,
Old Barge Iron Wharf, Upper Ground Street,
LONDON.

GEORGE NEWTON,

(Late Senior Partner of the Globe Meter-Works,)

UNION STREET WEST, OLDHAM,

MANUFACTURER OF

IMPROVED WET & DRY CONSUMERS GAS-METERS,

GAS STATION-METERS,

With all the Joints planed,

GOVERNORS, GAUGES, INDICATORS, EXHAUST GOVERNORS, &c.

TERMS, &c., ON APPLICATION.

THE GAS-METER COMPANY

(LIMITED), LONDON,

(Successors to CROLL, RAIT, and CO., LONDON, and WEST and GREGSON, OLDHAM.)

MANUFACTURE

STATION-METERS & GOVERNORS

At their Oldham Establishment, which has long possessed the reputation of supplying this description of apparatus of the most perfect construction and appropriate design.

CONSUMERS GAS-METERS IN CAST-IRON & TINNED SHEET-IRON CASES.

STREET GOVERNORS, PRESSURE and EXHAUST REGISTERS, TEST GASHOLDERS,

AND EXPERIMENTAL GAS APPARATUS GENERALLY.

For information, &c., apply to

W. ARCHER, Manager, Meter Factory, OLDHAM;

OR TO

GEORGE RAIT, Managing Director, KINGSLAND ROAD, LONDON.

GAS AND WATER PIPES.

CLARIDGE, NORTH, & CO.,

BILSTON.

C. A. S. VICKARY,

(ADMINISTRATRIX TO THE LATE JOHN VICKARY,)

GAS ENGINEER AND CONTRACTOR, IRON AND BRASS FOUNDER,

EXE ISLAND, EXETER,

Tenders her best thanks to the various Gas Companies in **England, Ireland, and Wales,** for the very liberal and kind support received by her lamented husband for the last **22 years,** during which period he erected and extended more than **200 Gas-Works.** She respectfully solicits a continuation of that support, and begs reference to the following testimonial:—

Plymouth and Stonehouse Gaslight Company.

Sir,—I have much pleasure in testifying that the 100-foot Telescope Gasholder and Cast-Iron Tank, erected by you for this Company in 1862, has given the highest satisfaction, and never required the slightest alteration or adjustment since its completion.

Mr. John Vickary. (Signed) PETER ADAMS, Chairman.

The late Mr. Vickary also erected a 100-foot Gasholder and Cast-Iron Tank at **Exeter;** an 80-foot Telescope Gasholder and Iron Tank at **Devonport;** a 90-foot at **Torquay,** &c., &c. At either of these works satisfactory references can be made.

C. A. S. V. begs particular attention to her **Improved Gas-Meters,** both **Wet and Dry,** the materials and workmanship of which are guaranteed of the very best description, and which have gained for her Meters so excellent a reputation.

RETORTS, DIP & ASCENSION PIPES, HYDRAULIC MAIN, CONDENSERS, PURIFIERS, STATION-METERS, GOVERNORS, VALVES, and GASHOLDERS,

Of any size, and every description of article required in Gas-Works supplied.

Mains, Tees, Connexions, and Syphons, from 2 to 12 in., always in stock, and supplied at Scotch prices.
Clay Retorts and Fire-Goods of every description.
Chandeliers and Gas-Fittings of the most modern designs.
Iron Pipe and Fittings, Service Cocks, &c.

Plans, Specifications, and Estimates for the Erection of New Gas-Works of any size furnished.

PIGGOTT'S IMPROVED RETORT-LIDS.

Convex *Rabbeted* *Dished*

The Manufacturers desire respectfully to call the attention of Gas Companies and Engineers to their Improved Retort and other Stamped Wrought-Iron Lids, which possess the following advantages over Wrought Lids hitherto manufactured:—Uniform size and shape, a smooth and even surface, and a superiority of finish hitherto unattained. These desirable qualifications are preserved *irrespective of form*.

The Manufacturers have recently laid down extensive Hydraulic Machinery, with a view to acquire the above result, and the success they have achieved in this branch of their business has surpassed their most sanguine expectations. The simple fact that these Lids fit into one die, and are stamped and cut out at one blow, is a sufficient proof that they must be necessarily alike in all respects, and superior to any other make.

The following Gas Companies have the Lids in use, and can certify to their merits:—

Belfast,	Burslem & Tunstall,	Fazeley,	Luton,	Stoke Fenton and Longton,
Beverley,	Bury,	Gloucester,	Nottingham,	South Shields,
Birkenhead,	Carlisle,	Harrogate,	Nuneaton,	Southampton,
Birmingham and Staf-	City of London,	Huyton and Roby,	Perth,	Stockton,
Bolton, [fordshire,	Cowes,	Leeds,	Preston,	Tunbridge Wells,
Bombay,	Croydon,	Leicester,	Portsea Island,	Victoria Docks,
Bradford,	Crystal Palace,	Liverpool,	Rossendale,	Warrington,
Brighton,	Derby,	Longport,	South Metropolitan,	&c., &c.
Brighton and Hove,	Equitable, London,	Lowestoft,	London,	

PRICE LISTS ON APPLICATION.

THOMAS PIGGOTT & CO.,

(Established 45 Years,)

ENGINEERS, CONTRACTORS, and IRONFOUNDERS,

GASHOLDER, GAS APPARATUS, & STEAM-ENGINE BOILER MAKERS,

SPRING HILL, BIRMINGHAM.

D. BRUCE PEEBLES,

ENGINEER,

FOUNTAINBRIDGE WORKS, EDINBURGH,

PATENTEE AND MANUFACTURER OF THE

NEW TONGUE & GROOVE JOINTED

WET AND DRY GAS-METERS IN TIN-PLATE CASES,

Being the only Meters yet made of Tin-Plate in which Screws are used for the whole of the jointing instead of Solder.

Gas Engineers who have not yet seen these Meters are solicited to give a trial order, and personally to take one of them to pieces and refit it, as being the short and easy way of assuring themselves of the strength and excellence of the materials, the superiority of the workmanship, and, above all, the simplicity of construction and efficient method of jointing employed.

Strength and lightness combined, with ready access to all the working parts for cleaning or repairs, which may be done by any ordinary workman, render these Meters, wet or dry, well worth the attention of Foreign Gas Companies.

Wet Meters in Cast-Iron Cases, Station-Meters, Governors, Experimenting Meters, &c.

PRICE LISTS ON APPLICATION.

IMPORTANT TO WATER COMPANIES, BUILDERS, &c.

DALZIEL'S PATENT

COMBINED COCK AND VALVE,

OR POSITIVE WASTE OF WATER PREVENTER.

Its simplicity, cheapness, strength, durability, and compactness recommend it for every domestic purpose. By its adoption Water Companies will be enabled to give a constant supply to the public, with certainty that no waste can take place.

To be seen daily in operation at 13, Crooked Lane, King William Street, E.C., from Eleven to Twelve.—For price and particulars apply to

WILLIAM DALZIEL, ENGINEER, CREEK ROAD, DEPTFORD, S.E.

THE

UNIVERSAL EXHIBITION OF PARIS,

1867.

SILVER MEDAL.

THOMAS CLOVER & CO.,

DRY GAS-METER MANUFACTURERS,

214 TO 222, ST. JOHN STREET, CLERKENWELL GREEN,

LONDON,

HAVE BEEN AWARDED THE HIGHEST PRIZE FOR

DRY GAS-METERS,

BY THE IMPERIAL COMMISSIONERS FOR THE

UNIVERSAL EXHIBITION, 1867.

WILLIAM PARKINSON AND CO.

(SUCCESSORS TO SAMUEL CROSLEY),

PATENT WET AND DRY GAS-METER MANUFACTURERS, &c.

COTTAGE LANE, CITY ROAD, LONDON, E.C.

Established 1816.

PATENT IMPROVED WET METER.

W. P. and Co. invite especial attention to this Meter, which entirely overcomes the difficulty to which ordinary Wet Meters are subjected, owing to the short range of the Float, which is necessary, in order to meet the requirements of the Sale of Gas Act.

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The subscription to the JOURNAL is 15s. per annum, if paid in advance during the month of January, or 18s. credit, in two sums of 9s. each, in July and January of each year. Post-Office orders should be made payable at the Money-Order Office, London, to William B. King, 11, Bolt Court, Fleet Street, by whom the business department of the JOURNAL is conducted.

SCALE OF CHARGES FOR ADVERTISEMENTS.

Six lines and under . . . . . 3s. 0d.

Sixpence per line for every line additional.

Special contract for advertisements intended for continuous insertion.

The next number will be published on Tuesday December 7, and the subsequent numbers on each successive alternate Tuesday.

This JOURNAL has been duly registered at the General Post-Office for transmission abroad.

All communications for the Editor to be addressed, "No. 42, Parliament Street, Westminster;" and all remittances for subscriptions or orders for advertisements to the Publisher, No. 11, Bolt Court, Fleet Street.

THE JOURNAL OF GAS LIGHTING, WATER SUPPLY, & SANITARY IMPROVEMENT.

TUESDAY, NOVEMBER 23, 1869.

Notes upon Passing Events.

THE President of the Institution of Civil Engineers, in his address at the first meeting of this session, on the 9th of November, referred to "the attack made by the Government of India on the honour of the profession," and the consequent correspondence which has been so widely circulated. To outsiders it is almost refreshing to witness the fever of excitement produced by the rash sweeping charges of the Indian Government on a profession which has hitherto seemed to treat non-professional opinions and the action of newspapers with indifference, if not contempt. The engineers seem deeply disappointed that the press have not taken up their quarrel, and re-echoed the virtuous indignation which cried aloud from the new hall in Great George Street. The *Times* had evidently been spoken to; but the trumpet, in reply, gave a very uncertain sound. And so it will always be as long as the Institution of Civil Engineers close their doors to the press, in a manner not practised by any other institution. This rule was all very well in the days of the battles of the giants, when Stephenson and Brunel, broad gauge and narrow gauge, atmospheric and anti-atmospheric, divided the profession into hostile camps. But those days are gone for ever, and there is no more reason for reducing the discussions of the Institution to one milk-and-water style, than for returning in House of Commons reports to the imitations of Dr. Samuel Johnson. As to the case in dispute, it was just as absurd of the Indian Government to brand all engineers with the practice of taking commissions, as to have solemnly reported that all doctors make unnecessary visits and send in unnecessary physic, or that the principal object of all attorneys is to swell the items of conveyances and prolong the agonies of litigation. There are engineers whose vast legitimate incomes account for any fortunes they may accumulate. There are also engineers of high professional attainments who, from want of the art of engineering men, never get the practice to which their abilities entitle them, and remain comparatively poor. It must, however, also be confessed that there are also engineers whose practice seems extremely moderate, who do not keep, or ever kept armies of clerks, and yet, out of one big public work, manage to make wonderful incomes or wonderful investments. Their services are not at a premium, like Hawkshaw's, or Hawksley's, or Fowler's, or half a dozen others of the same class, but their incomes must be wonderful—

> Like flies in amber;
> Not that the thing is either rich or rare;
> We wonder how the devil it got there,

until some one tells us that the engineer of the Great Timbuctoo line has bought all the rails, all the locomotives, and, in fact, all the plant! As Governments are impalpable, the indignant remonstrance of the engineers will produce nothing more than a reply in which a general apology will probably be offered in a very ungracious manner, and, as we hear hinted, some particular cases stated, which will rejoice the exiled heart of the engineer who, some time since, was sent into outer darkness and the Continent.

The first attempt to redeem viaducts from the utter hideousness of the iron age, by the union of the arts of the architect with the engineer, at Holborn Viaduct, has not been entirely successful, and the "all iron, nothing but iron," men are proportionately jubilant. There has been a partial failure—a trifling splitting of certain portions of the granite columns so justly admired by professional and unprofessional observers on the day of opening. As the matter has been referred to such competent authorities as Mr. Bidder, Mr. T. E. Harrison, and Mr. Edwin Clark, to examine and report as to cause and remedy, we need not waste space in speculations which would be both idle and dull. That any hitch has taken place is a pity, because the advocates of safety and ugliness are always sufficiently powerful. In this instance, the accident happening in one of the greatest thoroughfares of London, and to a building in which the public took so much interest, has excited unusual attention. Careful observers may find settlements or cracks in every great building in London; for instance, a huge crack in London Bridge, which has not varied for the last quarter of a century. Real accidents, much more important, on railways have excited less attention, because the works were not in use; as, for instance, on the Metropolitan and on the Hampstead lines. In the instance of the Holborn Viaduct, Messrs. Harrison and Clark have already reported that—

> In the absence of Mr. Bidder from town, and considering the public importance of the subject, we have, without waiting for his return, carefully examined the viaduct, and have no hesitation, in answer to the first question, in giving our opinion that it is perfectly safe for public traffic.
>
> With reference to the second inquiry, we are giving the matter our best attention, and, on Mr. Bidder's return, we hope to be able to submit our views to you without delay.

The distribution of rewards has been as comical as usual. The Lord Mayor has been made a baronet, in virtue of his office and politics; the two sheriffs, because they were accidentally elected to an honorary office, have been knighted; the chairmen of the two committees and the two engineers have been passed over, but then the head of the police has been made a C.B.

A report of the select committee of the House of Commons on the Thames Embankment approaches contains an account of the powers which control, or rather do not control, the public buildings of the metropolis. This report, like many others, is much more successful in suggesting defects than remedies. Thus—

The construction of the Thames Embankment was entrusted by Parliament to the Metropolitan Board of Works, without any directions as to the character of the work. The Board might have constructed it of brick instead of granite, and might have made it no ornament to the metropolis. In fact, it is a very fine work as an engineering work, but Mr. Layard points out that the architectural details might have been improved if the designs had been submitted to a competent authority. The landings, he says, are in many places far from handsome; and the coping of the parapet is not worthy of the embankment. At this moment, it seems, there is no control over the elevation of the railway stations, and the railway company might raise stations entirely disfiguring the embankment. So, also, Parliament gave power to the City Corporation to erect the New Meat and Poultry Market in Smithfield in any way they pleased. The design of the Holborn Viaduct was laid before Parliament to show what the Corporation intended doing, but the Act passed did not bind them to adhere to that design. It was represented to the committee that in the City some works are under the control of the Commissioners of Sewers, and some are under one standing committee of the Corporation and some under another. The design of the railway bridge across the river at Blackfriars went before the Bridge Committee; the continuation of that line of rail across Ludgate Hill went before the Sewers Commission. The new market in Smithfield went before the Markets Improvement Committee, but the streets and approaches were submitted to the General Improvement Committee. The Bridge Committee seem to have settled the erection of London Bridge, but the approaches were made by a different committee. With the slightest alteration, the Monument might have been brought in at the end of King William Street, making a fine vista. A remarkable drinking-fountain has been put up in King Street, close under the beautiful front of St. Lawrence, Jewry; that is described as under the control of the parish. The powers of the First Commissioner of Works are very limited; he could not prevent the erection of the ugliest of statues in a public square in London. In the instance of great Government works, such as the Foreign Office, a plan is exhibited in the library of the House of Commons before the Bill is passed, but the Bill gives uncontrolled power to the Government. Railways have been admitted into London without due stipulations as to the architectural character of the works. The result has been unfortunate. London Bridge is a very fine entrance to the City; but there is an iron girder crossing the road at no possible angle with the street, and one part is a semicircle joined on to a straight girder in the ugliest way possible. The fine old church of St. Saviour is blocked out by this vile girder crossing the street. Entering the new street—Southwark Street—you find another nasty girder crossing at a very bad angle. That street was built by the Metropolitan Board of Works at a great cost, and immediately afterwards a railway company obtained power to go over it, and has really made the Blackfriars end a tunnel by a series of bridges one following another. This has caused a serious loss to the Board by depreciation in value of the land on either side of the street. There are several very objectionable railway bridges or viaducts on the south side of London. Crossing the Thames, the river frontages of the railway stations at Charing Cross and Cannon Street are seen to be hideous. The two bridges at Blackfriars spoil one another. Mr. R. Redgrave supposes that if the public had thoroughly appreciated beforehand what they were about to erect, the Nelson Column would never have been raised; and he asked what can be more disgraceful than the Duke of Wellington pressing down an enormous arch at Hyde Park. The committee took much evidence as to the course to be adopted in future. With regard to private houses, we are improving in taste year by year, and the City authorities, in making new streets, require plans of the elevations of the houses to be submitted to them before they grant building leases. Mr. Layard, then First Commissioner of Works, stated that he should be content, as a first step, with a deposit of plans, elevations, and designs in his office whenever any public company or corporate body applies for parliamentary powers to enable it to execute any works in the metropolis, and that the First Commissioner of Works should report to Parliament upon the subject with a view to the committee on the Bill checking the execution of anything which would disfigure the metropolis.

Considering that the First Commissioners of Works have been, within the last few years, the Honourable William Cowper, Lord John Manners, Mr. Layard, and now Mr. Ayrton, and that they have all, except the last, differed on what was the true and the beautiful, while the last declares that the beautiful is of no consequence, there does not seem much to be gained from appeal to the Woods and Forests, unless Mr. Layard would consent to be the permanent dictator on matters of art within the metropolis for the next ten years. With respect to the City, no doubt, when Corporation reform takes place, all anomalous jurisdictions will be merged in one council or committee, in which the architect and engineer will sit and advise. If the metropolis were reduced into one great Corporation, or even a federation of Corporations, under the Lord Mayor of London, the supervision of designs for public buildings would, no doubt, be referred to one department, advised by competent officers. At present, the House of Commons committee has done its work by showing our deficiencies. Even Paris does not escape from abominable statues; witness the notorious group on the new Opera House.

The omnipotence of the Corporation of London as a legislative body—its want of harmony with the spirit of the age—is shown in a remarkable manner in two reports recently adopted by large majorities of the Common Council and Court of Aldermen, in the teeth of intelligent and able opposition. In the first instance, a committee appointed to consider the best way of turning to account various sums of money, including accumulations of twenty-five thousand pounds and an income of nearly three thousand a year, bequeathed to release poor debtors, reported in favour of building an industrial school, in which fifty destitute boys and fifty girls not convicted of crime should be boarded, clothed, and trained in industrial pursuits—the boys, where possible, for sea service, the girls for domestic service—this institution to be under the management of fifty-two governors, of whom twenty-six should be aldermen, each governor to have, in turn, the privilege of nominating a boy and a girl. It is not possible to imagine an institution more mischievous, or more sure to be mismanaged. The fifty-two governors will be practically irresponsible, for in such cases there is "safety in numbers" for the governors, but not wisdom. There is no instance of sound administration by a large number of administrators. The office will be eagerly sought for its patronage; each governor will be regularly canvassed for his next presentation. As to the object of this little industrial school, it will be simply one more bribe, one more prize to tempt paupers into the City, one more means of providing for the nameless offspring of poor women by influential citizens. If the Corporation were seriously to embark in a scheme for suppressing infant mendicancy and infant vagabondage—for sweeping in one wide net all who were not at work or at school—for employing the City police in this duty, and endeavouring to suppress the infant schools of crime to be found in every thoroughfare and open space, by carrying off the children and severely punishing the parents—it is probable that Parliament would be inclined to grant special powers for such an experiment. But to pick out of the ragged children of the City about twenty-five specimens every four years—for that, after the first four years, must be about the average—would have as much effect on City vagabondage as directing a garden squirt to the purification of the walls of Guildhall. This extraordinary scheme for adding to the personal importance of a body elected for life, has escaped the attention of the press in the excitement occasioned by the Queen's visit to the City. But when the Bill for carrying it into effect comes before a select committee of the House of Commons, we doubt whether even the Corporation influence of the members for the City, for Finsbury, for Hackney, and for Lambeth, will make it pass muster with educational reformers of the modern school. An obvious mode of applying these funds in the direction suggested, would be to divide them amongst existing institutions which provide training-ships for ragged boys and educate girls for domestic service, giving the City magistrates the privilege of nominating a certain number of the Arab fry brought before them at Guildhall. But such modest arrangements would afford no room for the patronage of a building with a staff of paid officials, and the selections would be made by judicial sentence, and not by private preference.

Exactly the same disregard for sound principles and hunger for patronage was shown in the Corporation's debate and division on the future management of Emmanuel Hospital. This hospital, founded by Lady Dacre, combines the plan of an almshouse and a school. The funds at present consist of three thousand a year derived from land, and twelve thousand pounds invested in the funds. At Westminster, the hospital and grounds occupied four acres, one acre of which was most fortunately taken by the Metropolitan Railway; if the remaining three acres were sold at the same price, they would realize about thirty thousand pounds. Hitherto the funds have supported a certain number of persons in almshouses, and kept a school where boys, clothed in an absurd uniform, were boarded and educated in a manner described by the Endowed Schools Commissioners as not satisfactory. The aldermen of London, to whom Lady Dacre left the entire control of the charity, are now compelled, under the Endowed Schools Act, to submit a new scheme for its management. A large majority have decided, wisely perhaps, to abolish the almshouses, and grant increased pensions instead. The remainder of the funds it is proposed to employ in boarding, clothing, and educating an equal number of boys and girls in a school in the country—a kind of small edition of Christ's Hospital. Mr. Alderman W.

Lawrence, M.P., Sir Thomas Gabriel, and Sir Sydney Waterlow, opposed the scheme as far as it related to the school. They pointed out that Lady Dacre had the special benefit of Westminster in view. At present thirty boys and thirty girls are supported and educated at the expense of the charity; but, with the assistance of a small payment per head, 500 boys and as many girls might receive an excellent education in day-schools to be founded in Westminster, without food or clothes. This would give the greatest amount of education to the greatest number. The sons of artisans, spending part of their time at home, would receive there "the best kind of technical "education." It might also have been urged that scholarships open to competition could be established, which would enable the poorest, if clever, to pursue their studies at other institutions, such as the Schools of Chemistry and Mining in Jermyn Street. We will not do the Court of Aldermen the injustice to suggest that they were influenced by the argument urged by Alderman Cotton and Colonel Wilson—worthy of Lord Eldon—that it was the duty of this generation "to carry out "the directions of founders to the letter"—a principle dismissed alike by our courts and our Parliament. The truth, no doubt, was that love of patronage prevailed. The aldermen could not surrender the power of nominating the sons of friends, relations, and dependents, to be costumed in blue and yellow, to march and bow before the generous dignitaries, who gave money that cost them nothing, on ceremonial days—the fuss of a committee, the pleasant luncheons, jaunts into the country, and the annual dinner, where everybody proposes everybody's health and returns thanks. However, before this Emmanuel Hospital job is settled, the Endowed Schools Commissioners and Parliament will have a word to say to it. Such a decision could never have been arrived at by a municipal body responsible to constituents, in the face of the success which has attended the establishment of the new middle-class school in Cowper Street, City Road. At a meeting which took place a fortnight ago, the Lord Mayor Lawrence was the only alderman present! The building is, perhaps, the most perfect model of a school extant; it contains 20 class-rooms, each designed to seat 50 boys. There are large and comfortable lecture-rooms, hung with diagrams and educational illustrations; extensive playgrounds, three spacious lavatories, and domestic offices, fitted with every modern improvement. There is a dining-room below, where 500 boys may enjoy an excellent dinner, cut from joints of the best meat, for 6d. per head. Already the scholars number 900; only three years ago, when the temporary schools in Bath Street were opened, no pupils were present. For one guinea a quarter, payable in advance, the sons of persons of the middle and lower classes are instructed by competent masters, who carry out a system of education of a practical character, based upon sound religious principles, calculated "to fit the scholar for the industrial and "commercial work of life, under the superintendence of a head "master appointed by the council," and who is a member of the Universities. The council have purchased a site for a school of a similar character in West Square, Southwark, where the school is intended to accommodate 500 boys; and the Lord Mayor said that he "should not be content without "a belt of ten such schools in and around the metropolis." Now, it must be remembered that this system of schools was originated by one zealous City clergyman, and founded by the subscriptions of great merchants and others, few of whom are connected with the Corporation. If endowments such as Emmanuel Hospital and Christ's Hospital are properly applied, there is no reason why schools should not be open to the sons of artisans at less than half the fees for the middle-class schools, with free scholarships for boys elected from the national primary schools.

A guardian of St. Pancras said, the other day, in answer to a colleague who was storming against centralization and in favour of stinking infirmaries, that he "preferred *centraliza-*"*tion to multification.*" He was a shrewd fellow. According to the signs of the times, to a centralized Government the most important department of municipal government will shortly come. Sir Benjamin Hall's system is a complete failure. Instead of a knot of men of business doing the business of the parish or district, and then going about their own business, we have little parliaments of small tradesmen and lawyers clerks, sitting in halls more comfortable than the House of Commons, airing eloquent harangues that formerly were delivered in public-houses to a chorus of pewter pots. Nothing useful can be done until the numbers of the guardians of the poor and of the District Boards are reduced. The idea of placing the management of the poor and the management of the streets of the metropolis under two paid Boards, periodically elected, gains ground. At present relief is so easily obtained that the receiving-houses for casuals compete most successfully with the penny lodging-houses. Until mendicity is made an affair of police, we shall find an annual increase in metropolitan pauperism. It is much too big a thing to be left to the squabbles of amateurs. Ten efficient paid men—perhaps five—would manage all the pauperism of St. Pancras with economy and vigour.

GAS LEGISLATION OF 1869.

In the last session of Parliament only twenty Acts relating to the supply of gas were passed. Of these, six give further powers to companies already possessing statutory powers; six confer parliamentary authority on companies which have carried on their works without such sanction; four incorporate new companies; two authorize the transfer of gas undertakings to local authorities; and two empower local authorities to purchase undertakings, and endow them with other general powers.

Of the first six, the most important is the *Imperial Gas Act*, which has been so fully reported on during its progress, that we need only refer to the JOURNAL for July 6, and the proceedings before the committee, for a full account of the Act.

The *South Metropolitan Gaslight and Coke Company's Act* is fully described in our JOURNAL for January 19. By clause 14, however, the whole of any excess of profits, after providing for the dividends and insurance-fund, may be carried to the credit of the divisible profits for the following year.

The *Oxford Gaslight and Coke Company's Act*, 1869, repeals an Act incorporating the company passed in 1818, and continues the company with all their acquired rights and liabilities corporate and individual. The capital of the company is now to be £24,000, whereof £18,000 (the original capital) is to be divided into 240 shares of £25 each, which are to be called A shares; and £6000, being half of what is alleged to have been expended on works out of profits applicable to dividend, is to be divided into 240 shares of £25 each, which are to be allotted as fully paid up, rateably to the present shareholders, in discharge of all claims to arrears of dividend. The first dividend on these latter is to be due and payable on the 24th of June, 1870. Existing shares remain vested in the respective shareholders, subject to the same conditions as before the passing of the Act. New share certificates are to be issued. In addition to the before-mentioned capital, the company are empowered to raise, by the creation of new ordinary or preference shares, or both, a further sum or sums not exceeding £30,000, in £20 shares, to be called C shares. The dividend on B shares is not to exceed 5 per cent.; and on C shares, if ordinary, 7 per cent., or if preference, 6 per cent. Power is given to borrow at once £6000, which is to be paid to the Local Board in one or more debentures, in discharge of claims alleged to be due as surplus of profits in past years, such debentures to bear interest at the rate of 5 per cent. Under the Act of 1818, it should be said, provision was made for payment to the Corporation of all profits exceeding 10 per cent. Hence the claim to a portion of the profits expended on the works. After the additional capital of £30,000 has been issued, and one-half paid up, a further sum of £7500 may be borrowed. Debenture stock may also be created, with a preferential interest not exceeding 5 per cent. An auditor is to be appointed, and no dividend can be declared until the accounts, which are to be kept in a prescribed form, have been certified, and laid before several local authorities. Provision is made for arbitration in case of disagreement between the auditor and the company. If the clear profits exceed an amount sufficient to make a dividend of 10 per cent. on A shares, 5 per cent. on B shares, and 7 per cent. on additional capital, the excess to the extent of 1 per cent. on paid-up capital may be invested to form an insurance-fund to answer any deficiency in the amount of divisible profits, or to meet any extraordinary claims. This fund may be made up again if reduced; but if it reach one-tenth of the paid-up capital, the interest thereon is to be carried to the fund available for dividend. Any profits beyond what is necessary to provide for the above-mentioned dividends and insurance-fund, are to be paid to the Oxford Local Board, to be applied in aid of the rates. There are to be five directors, qualified by the posses-

sion of six A shares, or £100 of stock if the shares are consolidated. The company may acquire land to the extent of 15 acres, but no gas is to be made except on the land at present occupied or closely adjoining. Besides making and supplying gas, the company may manufacture and sell pitch, asphaltum, sulphate of ammonia, oil, and other products and residuum of materials employed in or resulting from the manufacture of gas, and also meters, fittings, &c. The price of 14-candle gas is not to exceed 4s. in the district of the Local Board, and 4s. 6d. beyond. Public lamps are to be supplied at the lowest price charged to any private consumer, the gas to be consumed by meter if required by the Local Board, the meters to be provided by and fixed at the expense of the Board. The Local Board may provide a testing-place and apparatus, and may appoint a competent person, not a member or officer of the Board, who may make experiments (after giving three hours notice to the company) at any hour in the daytime, and not later than eight p.m.; and on deficiency in illuminating power being proved to the satisfaction of two justices, or for any obstruction to the examiner, a fine of £20 may be inflicted. The company are required to make a map to a scale of at least 5 feet to the mile, showing the lines, sizes, and depths of all mains and pipes, except service-pipes to consumers, and the positions of all valves, syphons, and other appliances, such map to be corrected yearly. It is to be open to the inspection of the Local Board and their officers and the public generally, and the company may charge 1s. for each inspection, and 2s. 6d. for any extract or tracing taken. The Act confers the customary powers of inspection, and provides the usual remedies against fraud. It reserves the right of the Local Board to erect works and supply gas, compels the company to pay the costs incurred by the Board in respect of the Act, and, as a matter of course, saves the rights and privileges of all members of the University.

The *Accrington Gas and Water Works Act*, so far as it deals with the supply of gas, only gives the company the usual power to inspect and remove meters and fittings, and to sue for arrears of rates. It imposes a penalty for injuring meters, &c., belonging to the company, and obliges consumers making use of their own meters to keep them in proper order.

The *Radcliffe and Pilkington Gas Act* empowers the company to raise additional capital to the extent of £50,000, by the issue of stock or shares, ordinary or preference, the dividend on which is limited to 7 per cent. if ordinary, or 6 per cent. if preference. Power is also given to borrow £3125 in respect of each fourth of the above capital issued and half paid up. Debenture stock may be created and issued. The gas is to have the illuminating power of 14 candles. No conditions as to impurities are imposed, and no price is fixed by the Act. The company are to maintain an experimental meter and apparatus for testing, to which a competent person, appointed by two justices, on requisition, is to have access in the daytime; and a penalty of £20 may be imposed for deficiency of illuminating power or any hindrance to the experiment. The meters to be supplied by the company or erected by consumers must be in accordance with some model recognized by the Sales of Gas Act. The usual power to remove meters, fittings, &c., are conferred; and there is a clause to prevent waste and frauds. Nothing in this Act is to affect the rights and privileges of the Farnworth and Kearsley Gas Company.

The *West Ham Gas Company's Act* gives power to the company to raise additional capital to the extent of £150,000, by the issue of new shares, ordinary or preference, or both, as they may think fit. In respect of every fourth part of this additional capital issued and half paid up, the company may borrow on mortgage a further sum of £9375; and they may create and issue debenture stock with a perpetual preferential interest of 6 per cent. The prescribed rate of profits to be divided on ordinary shares is to be as follows:—7½ per cent. when the maximum price is 4s. 6d., 8 per cent. when the price is 4s. 3d., 9 per cent. when 4s., and 10 per cent. when the maximum price does not exceed 3s. 9d. per 1000 feet. After this year the maximum price chargeable is 4s. 6d. The illuminating power of the gas is for the future to be equal to 14 candles. Public lights are to be supplied at the lowest price charged to any private consumer, except under special contract. The Act gives the usual powers of inspection, and provides for the recovery of debts, and for the prevention of frauds and waste. The company is empowered to purchase the lands now held on lease.

The six Acts conferring statutory powers on companies heretofore without that authority are—

The *Barnstaple Gas Act*, which incorporates a company to be called "The Barnstaple Gas Company," and authorizes the purchase of the undertaking of the Barnstaple Gaslight Company, Limited, under an agreement scheduled in the Act. The nominal capital of the new company is to be £16,000, in 1600 £10 shares. These are of two classes—class A, consisting of 654 shares issued as fully paid up, which are allotted as consideration for the old company. Class B consists of 946 shares, none of which are to be issued until one-fifth of the amount of each share has been paid. The profits of the company are to be applied, first, in payment of 7 per cent. on all paid-up share capital, whether of class A or B; secondly, in payment of deficit of 7 per cent. on past year or years; thirdly, in payment of a further 3 per cent. on class A; and, fourthly, in payment of deficit of such further dividend of 3 per cent. The company are not to make out of their profits any larger dividend than is provided for as above. They may at once borrow on mortgage £1600, and, when half the share capital of class B has been paid, may borrow a further sum not exceeding £2400; they may also issue debenture stock with a perpetual preferential interest not exceeding 5 per cent. The number of directors is to be not less than three nor more than five, the qualification being not less than ten shares of either class. The price of 14-candle gas is not to exceed 4s. 3d. to private consumers, and 3s. 10d. for public lamps; and the gas is to contain no sulphuretted hydrogen, not more than 5 grains of ammonia, and not more than 20 grains of sulphur in 100 cubic feet. The company are to provide a testing-place and apparatus, and the Town Council have power to test, or two justices, on the application of five consumers, may appoint a tester, and the company may be fined £20 for any deficiency of illuminating power, or for obstructing the examiner. The Act confers the usual powers for the inspection and removal of meters, &c., and provides the ordinary remedies for the recovery of debts and the punishment of frauds. Various clauses direct the arrangements to be made in the transference of the undertaking from the old company to the new.

The *Ilkley Gas Act* dissolves the Ilkley Gas Company, Limited, and incorporates the proprietors thereof with others into a new company, to which it transfers all the property, claims, and liabilities of the old company. The capital of the new company is to be £2100, in 210 £10 shares fully paid up; in addition to which power is given to raise £10,000 in £10 shares, ordinary or preference. The dividend on ordinary shares in this additional capital is not to exceed 7 per cent., or on preference shares 6 per cent. Share certificates of the old company are to be called in and cancelled, and certificates of proprietorship in the new company are to be issued. Power is given to borrow £500 in respect of present capital, and £250 in respect of each £5000 of additional capital, with the usual proviso that one-half of that additional capital is paid up. The number of directors is to be five, but may be reduced to three; the qualification is £50 of capital in the new company. Besides the lands vested in them by this Act, the company may purchase by agreement an additional five acres; but no works or gasholders can be erected on any but the lands referred to in the Act as "the gas lands." In addition to the supply of gas the company may sell residual products, and matters producible therefrom; and also manufacture, purchase, and supply meters, fittings, pipes, lamp-posts, and other articles connected with gas-works and the supply of gas for public and private consumption. The illuminating power of the gas supplied is to be 14 candles, and the price is not to exceed 6s. A testing-place is to be maintained not nearer than half a mile to any of the works, to which any Local Board within the limits of the Act, or person authorized, is to have access at reasonable times in the daytime for the purpose of testing the gas, and a penalty of £10 is imposed for obstructing or failing to afford facilities for the testing. Two justices, on application, may order an examination, and impose a forfeit of £20 for deficiency of illuminating power. No provisions as to impurities are made. The Act contains the usual clauses conferring the power of inspection, and for the prevention of fraud.

The *Cleckheaton Gas Act* incorporates as a company and grants further powers to the Cleckheaton Gas Company, established in 1837, and heretofore carried on under a Deed of Settlement. It transfers the whole of the property, claims, and liabilities of the old company to a new corporation, called "The Cleckheaton Gaslight Company." The capital is to consist

of £16,065, in 1071 £10 and 1071 £5 shares. These latter are to be called the "old shares," and remain vested in the proprietors of the old company. As soon as the shares are fully paid up, the company are to convert the whole of their capital into stock, to be divided among the shareholders according to their respective interests. Additional capital may be raised by the issue of new ordinary or preference shares; the amount raised, however, is not to exceed £13,935. "The "prescribed rate" of dividend on the original shares is to be 10 per cent., and on the additional ordinary shares 7 per cent., or on preference shares 6 per cent. No new shares are to be issued under a nominal amount of £10, and none are to be issued until one-fifth of the amount of each share is paid up. The company may borrow £4000 in respect of their existing capital, and a further sum or sums, not exceeding £3500, when the additional capital has been issued and one-half paid up. The number of directors is not to be more than seven, nor less than three, the qualification being shares to the registered value of £100. The directors of the old company remain in office until the first meeting of the new. The company may manufacture and sell all products and residuum resulting from the manufacture of gas, as well as meters, fittings, pipes, and anything connected with gas-works or the supply of gas. In addition to that described in the schedule, land to the extent of five acres may be purchased by agreement; but no gas may be made on any land except that mentioned in the schedule, nor can storeage works be erected within 300 yards of a dwelling-house, without the consent of the owner, lessee, and occupier. The gas is to have the illuminating power of 14 candles, and the price is not to exceed 4s. 6d. A testing-place is to be provided by the company, and two justices, on the application of five consumers, may appoint an examiner, the penalty for deficiency or obstructing examiner being £20. In the event of no penalty being imposed, the cost of the experiment is to be paid by the consumers making the application. Security for the payment of one year's rate may be required from any person requesting a supply, and all consumers may be required to consume by meter. The usual powers of inspecting meters and removing pipes, &c., are conferred, and the usual remedies against fraud and injuries are provided.

The *Shotley Bridge and Consett District Gas Act* dissolves a limited company, and incorporates the present shareholders and others into a new company, called "The Shotley Bridge "and Consett District Gas Company." All the property, claims, and liabilities, corporate and individual, are transferred from the old company to the new, the capital of which is to consist of existing capital, converted into stock, £11,905; new capital A, £3095; new capital B, £15,000; total, £30,000. The new capital A and B is to be divided into shares of not less than £10. One-fifth the amount of a share is to be the greatest amount of a call, and not more than three-fourths the amount of a share can be called up in one year. The dividend on the new capital B is limited to 7 per cent. Power is given to borrow £6000 when the whole capital has been issued and half paid up. Mortgages of the limited company are to have priority over any granted by virtue of this Act. The new company have power to issue debenture stock. The number of directors is to be nine, reducible to six; the qualification being the possession of capital in the company to the value of £300. Power is given to purchase certain lands described in a schedule, and also two acres more. In addition to the manufacture and supply of gas, the company may manufacture and deal in all products and residuum of materials employed in or resulting from the manufacture of gas, or which can or may be compounded or produced from coal. They may also engage in the manufacture of meters, pipes, and fittings. The illuminating power of the gas is to equal that of 12 sperm candles, and the price is not to exceed 5s. per 1000 cubic feet. No conditions as to purity are imposed. Apparatus for testing the illuminating power is to be erected and maintained by the company; and, as now generally provided, two justices may order an examination, to be followed by the usual consequences. The Act contains a scale of charges for the rental of meters, varying from 9d. per quarter for 2-light meters, to 18s. per quarter for 100-light meters.

The *Milnrow Gas Act* dissolves the Milnrow Gas Company, Limited, and incorporates the proprietors and others into a new company, which takes over the old, with all its claims and liabilities. We reported the proceedings before the committee on the Bill in our JOURNAL for April 27. The nominal capital of the new company is to be £20,000, in 2000 shares of £10 each; but power is given to raise a further £10,000 on the usual conditions. No restrictions as to dividends are made. One share in the new company is to be exchanged for two shares in the limited. Power is given to borrow £2500 in respect of £10,000 of capital issued and half paid up, and a further sum of £1250 for every £5000 of capital subsequently issued, but the amount borrowed is not at any time to exceed £7500. The price of 16-candle gas is not to exceed 5s. per 1000 feet. Public lamps are to be supplied at a rate fixed by agreement with the local authority. A testing-place is to be maintained at the works, and any justice, on the application of five consumers, may order an examination—the test to be made in the daytime, after giving six hours notice to the company; the usual forfeit of £20 being incurred by any deficiency of illuminating power or for any obstruction to the experiments. No reference is made in the Act to any impurity. The usual protective and saving clauses are inserted.

The *Maryport Town and Harbour Gas Act* dissolves and reincorporates the proprietors of the Maryport Gaslight Company, Limited, and, at the same time, empowers the trustees acting in execution of the Maryport Improvement and Harbour Acts of 1866 and 1868 to purchase the undertaking, stipulating that, until such purchase be completed, the trustees shall be limited to making and supplying gas to lighthouses and public lamps. The capital of the company is to be £14,994, of which £5600 is to consist of 560 £10 shares, and the remaining £9394 is stock, considered fully paid, vested in the shareholders of the existing company in proportion to their respective holdings. Stockholders are to have all the rights of shareholders. The rate of dividend is not to exceed 8 per cent. Power is given to borrow at once £2300, and a further sum of £1400 when the whole share capital has been subscribed for and half paid up. Debenture stock may be created and issued. Besides gas the company may supply and sell residual products and matters producible therefrom, and may manufacture and sell pipes, fittings, meters, &c., and generally carry on such operations and business as are for the time being usually carried on by gas companies. The gas is to have the illuminating power of 14 candles, and the price in the township of Netherall is not to exceed 4s. In the adjacent district the charge is not to exceed 5s. per 1000 cubic feet. The Act contains the usual protecting and saving clauses. In clause 57 an unusual provision is made. "The register of "the meter," it says, "*when in perfect working order*, is to be "deemed *primâ facie* evidence of the quantity of gas con-"sumed." The providing a testing-place is optional with the trustees, and no standard of purity is imposed.

Four Acts incorporate new companies. They are as follows:—

The *Aberdare and Aberaman Gas Act* incorporates a company under the name of the Aberdare and Aberaman Consumers Gas Company, with power to raise a capital of £30,000 in 3000 £10 shares. When 60 per cent. has been paid up, such shares may be divided into half shares, of which one shall be called preferred half share and the other deferred half share. On such division, 50 per cent. of the entire share—that is, all that is payable thereon—is to be carried to the credit of the deferred half share, and the residue to the credit of the preferred. The dividend, which is limited to 6 per cent., payable from the profits of the year only, is first to be paid on the preferred capital, and any remaining profits may be applied in payment of dividend on the deferred. When £10,000 has been subscribed for, and one-half paid, the Act gives the company power to borrow on mortgage £2500; and for every additional £2000 subscribed for and half paid up, a further sum not exceeding £500 may be borrowed. Debenture stock bearing 5 per cent. interest may also be created. The company are authorized to purchase the works, &c., of the Aberdare Gas Company; and, after the expiration of five years, the Aberdare Local Board of Health may, if they desire, purchase the whole undertaking. The number of directors is not to exceed ten, nor be less than five. The maximum price of 14-candle gas is to be 4s., and the charge for the supply of public lamps is not to exceed the lowest price charged to any private consumer. In public lights the consumption may be estimated by average meter indication. The company are to afford facilities for testing the illuminating power of the gas at the works, and the ordinary tests for ammonia and sulphuretted hydrogen may be applied. A penalty of £20 may be inflicted for deficiency of illuminating power, but no fine seems to be incurred by the presence of impurities.

The *Bridgend Gas and Water Act* incorporates a company with a capital of £11,000, in 1100 shares of £10 each. The company are under compulsion to purchase on agreement the works and plant of Mr. S. Cox, and others, if required to do so, and are not allowed to erect any other works if notice of the desire to sell be given. They have power to borrow a sum or sums not exceeding £2750, when all the capital has been subscribed for and half paid up; and they may issue debenture stock at 5 per cent. The directors are to be not fewer that five, nor more than eight; the qualification to be ten shares. The price of 14-candle gas is to be 5s. No conditions as to purity are imposed. A testing-place is to be provided by the company; and two justices, on application of five consumers, may appoint an examiner, and inflict a penalty of £20 for a deficiency of illuminating power, or for obstructing the examiner. The Act gives the customary power of inspecting and removing meters, and provides for the punishment of fraud and the recovery of debts.

The *Waltham Abbey and Cheshunt Gas Act* incorporates a company and gives power to purchase the works of Mr. Brown and three additional acres of land, providing that no gas is to be made or stored except on land described in a schedule. The capital is to be £20,000, in 2000 £10 shares. When this amount has been fully paid up, an additional £5000 may be raised, the dividend on which is not to exceed 7 per cent. Power is given to borrow £2000 when £10,000 has been issued and half paid up, and an additional £500 for every £2000 subsequently issued. Debenture stock may be created and issued. There are to be three directors qualified by the possession of 20 shares. The price of the gas is not to exceed 5s. 6d. per 1000 feet. It is to have the illuminating power of 14 candles, is to be free from sulphuretted hydrogen, and is not to contain more than 5 grains of ammonia and 20 grains of sulphur in 100 cubic feet. The company are to provide means for testing the illuminating power. Two justices, on application of five consumers, may order tests for illuminating power and purity, which must be made before eight p.m. The fine which can be inflicted is £5. Public lamps, the consumption in which may be estimated by average meter indication, are to be supplied at the lowest price charged to any consumer. If meters be used, regulators are to be applied to metered and unmetered lamps, through which the gas is to pass unrestricted during the whole time the lamps are lighted. The accounts of the company, made up as near as may be in a form specified in a schedule, are to be sent yearly to the clerk of the peace of the county of Essex, to be open to inspection at his office.

The *Walton-on-Thames and Weybridge Gas Act* incorporates a company, and gives power to purchase the works of Messrs. Craufurd and Hay. The nominal capital is to be £30,000, in £10 shares. Power is given to borrow £2500 in respect of £10,000, and £1200 on each £5000 subsequently issued, on the usual conditions. Debenture stock may also be issued. There are not to be less than three directors, qualified by ten shares. The price of the gas is not to exceed 6s.; and the quality and purity are to be the same as in the last-mentioned Act, the penalty for infringement being the same. Two justices, on application, may order an examination, and the vestry of Walton-on-Thames may appoint a person to make an experiment twice a year. In other respects the provisions of this Act are identical with those of the last mentioned.

Four Acts transfer the supply of gas from companies to local authorities.

The most important of these is the *Glasgow Corporation Gas Act*, the proceedings in connexion with which have been so fully reported in our columns that we need not here describe its provisions.

The *Oswaldtwistle Local Board Act* authorizes the Local Board to purchase the undertaking of the Oswaldtwistle Gas Company on an agreement previously entered into, and also compels the sale and transfer by the Accrington Gas and Water Company of the mains, pipes, fittings, &c., lying within certain limits for a consideration of £6000. The consideration for the purchase of the Oswaldtwistle Gas Company is not mentioned. Gas having the illuminating power of 14 candles is to be supplied by the Board at a price not exceeding 5s. per 1000 feet. No standard of purity is fixed. A testing-place is to be provided at the works, and two justtces, on application of five consumers, may appoint an examiner, who is to have access to the works in the daytime without giving notice. The usual penalty of £20 may be inflicted for deficiency in illuminating power. The Act confers on the Local Board all the customary powers, and contains the usual saving and penal clauses. Power is given to borrow £20,000 for the various purposes of the Act, which include the supply of water and the erection of a town-hall.

The *St. Helen's Borough Improvement Act* empowers the Corporation either to contract with the gas company for the supply of gas to all public lamps and places at the lowest price charged at the time to any private consumer, or to purchase the gas undertaking of the company on such terms as may be mutually agreed upon or settled by arbitration. After the completion of such purchase, the Corporation have the power to use any patented invention relative to the manufacture and distribution of gas or the utilization of residual products, but may not acquire any rights of an exclusive character. The price of 14-candle gas within the borough is to be 4s. per 1000 cubic feet, and outside the borough 4s. 6d. The gas is to be free from sulphuretted hydrogen. Penalties are imposed for wilful damages beyond satisfaction for the damage done; and a justice can order satisfaction to be made for accidental damages. The Corporation have the power to borrow money to discharge the purchase-money payable for the undertaking of the gas company.

The *Sligo Borough Improvement Act* empowers the Corporation to purchase the undertaking, property, and rights of the gas company, on such terms and conditions as may be agreed upon by the two parties, and approved by a person to be appointed by the Commissioners of Public Works in Ireland. The company are to discharge all debts, &c., before the transfer, or give the Corporation sufficient security for their satisfaction. After this the Corporation are primarily responsible for all claims, without prejudice to any remedy against the company. The gas company are to hold the purchase-money on trust to discharge their liabilities and distribute the residue among the shareholders. As soon as this has been done the company is to be dissolved. Gas is to be supplied by the Corporation at a price not exceeding 6s. per 1000 feet. The illuminating power, which is to be tested by Sugg's steatite burner, described in the Act, is to equal that of 14 "uncased" sperm candles. A testing-place is to be provided by the Corporation, and two justices may order an examination on complaint of any consumer, and if the complaint, or any part of it, prove well founded, the justices may order the cause thereof to be removed within a specified time; and, if the order be not complied with, the Corporation may be fined £5 for every day during which the failure continues. The Act makes no conditions as to the purity of the gas.

The Bills rejected or withdrawn were eight:—

That of the *Birmingham Gaslight and Coke Company* was withdrawn on account of a serious opposition threatened by landholders.

The Bills of the *Glasgow Gaslight Company* and of the *Glasgow City and Suburban Company* gave place to the *Glasgow Corporation Gas Act*.

The *Great Central Gas Consumers Company* failed to prove the preamble of their Bill. For a similar reason the *Dukinfield and Denton Local Boards of Health Bill* was not proceeded with.

The Bills of the *Cambridge Consumers Gas Company, Limited*, and the *Carmarthen Gas Consumers Company, Limited*, were not proceeded with, in consequence of arrangements having been made with the old companies.

THE PARIS GAS COMPANY.

An extraordinary general meeting of the shareholders of the Paris Gas Company was held on the 23rd of September. The meeting was called to obtain the sanction of the shareholders to certain modification, of the treaties between the city of Paris and the company, agreed upon by the directors and the municipal administration, and to make certain alterations in the statutes of the company. A report of the directors, read at the meeting, set forth that it was called to legislate upon two important proposals which they recommended for adoption. The object of the first was to introduce into the agreements of 1855 and 1861, with the city of Paris, some alterations, the propriety and expediency of which had been acknowledged by the municipal administration and by the legal advisers of the company. The second consisted in the introduction into the statutes of modifications intended—

1. To divide into two documents the scrip which represents the capital.

2. To reserve the power to form, by the annual deduction of small fraction of the profits accruing to the company, a special reserve-fund, for the purpose of compensating the profit shares (*actions de jouissance*) for the moiety of the property, personal and real, which by the agreement of 1861 is, when the concession expires, abandoned to the city.

While congratulating the shareholders on the continued and increasing prosperity of the company, the directors remark that their course has not been free from difficulties. Some they have avoided, and others they have smoothed over; and they acknowledge that the municipal administration has in general reciprocated the conciliatory spirit which has animated the company. On some essential points, however, the administration has persisted in giving to the agreement of 1861 an interpretation to which the directors could not consent. Hence some lawsuits, which are still pending, have arisen, and there was a prospect of further disputes in 1872, when the time for the division of profits with the city arrived. The directors, therefore, while confident of the result of the legal proceedings, think is wiser to terminate at once all disputes by an amicable arrangement rather than by decisions of courts of law.

Some of the arrangements of the treaties have become embarrassing to the municipal administration, inasmuch as they leave no possibility of satisfying interests which call for all their care. They therefore required the company to modify all these arrangements, so as to remove the difficulties which stood in their way. On the other hand, the approach of the time for a division of profits with the city caused the directors some anxiety. They feared that the considerable difference which would be produced between the dividend of the first year of the new period and previous dividends, would affect the value of the shares, and they endeavoured to find a means of diminishing the effect of this abrupt transition from one period to the other.

From this statement the directors said it might be seen how important it was for the city and company to settle the differences between them by equitable compensations, to reconcile their several interests, to extinguish their existing disputes, and, at the same time, prevent any from arising when the time for dividing with the city came. This they have endeavoured to effect by a general transaction which is calculated to attain the end, while protecting the security and credit of the company, and freely satisfying the rights and interests of the city. The directors anticipate that this compromise will have the happy effect of insuring a cordial understanding between the municipal administration and the company, and of removing all sources of discord.

By the arrangement proposed it is provided—

1. That the net profits annually realized by the company after the statutory deductions, and some presently to be mentioned, shall be divided with the city from the 1st of January, 1869, instead of the 1st of January, 1872.

2. That the annual deduction for dividend and interest on shares, which, according to the terms of the treaties, should be 8,400,000 frs. from the 1st of January, 1872, to the end of the concession, shall be raised to 12,400,000 frs. from the 1st of January, 1869, to the 31st of December, 1887; and to 11,200,000 frs. from the 1st of January, 1888, to the expiration of the concession.

3. That the zone annexed in 1861 shall be assimilated to the old Paris for the service of lighting; and that the city of Paris shall be discharged from all debts contracted for this service up to the present time, or which might be contracted, under the agreement of 1861, up to the end of 1872. [This debt amounted to 2,333,906 frs. up to the end of last December, and it might go on increasing to the end of 1872. The directors and the municipal administration together, have made an estimate of the amount it would probably reach at the expiration of the time, and the sum has been taken into account in the concessions now made to the city.]

4. That the sums paid by the company anterior to the year 1869, for the redemption of the obligations, as well as those deducted from the profits for the constitution of the statutory reserve, shall not give rise to any claim against the city of Paris. [The directors had a claim against the city for half the amount they had paid to the redemption-fund, as well as half the statutory reserve-fund. This sum has been taken into account in the concessions of the company.]

5. The company engages to lay down two mains under the footways in all streets 14 mètres wide, or more, and also in all those the roadway of which may be asphalted, whatever their width.

6. The city and the company acknowledge to have no demand nor reclamation to make against each other, particularly as regards stoppages made by the city for alleged deficiencies in the illuminating power of the gas prior to 1861. [The stoppages anterior to 1861 amounted to 434,200 frs., but in 1859 the city restored to the company 283,200 frs., leaving a balance of 151,000 frs. When the company claimed this balance, the administration not only refused to pay it, but also claimed the repayment of the 283,200 frs. which they had restored to the company in 1859. A lawsuit was thereupon commenced, the result of which so far has been adverse to the company; but an appeal to the Council of State is still pending, which will be stopped by the agreement now entered into.]

7. The mode of paying the *octroi* duty is now definitively fixed. The company will continue to pay a duty of two centimes on every cubic mètre of gas consumed in Paris. [By the agreement of 1855 the company were compelled to have all their works beyond the barriers, and were therefore free from any duty on coals; they paid, however, the same duty now agreed upon for all gas consumed in Paris, and also duties upon the coke, tar, and bye-products delivered for consumption within the city. When the barriers were extended, in 1860, it was left optional with the company to pay the duty on gas as before, or pay the duty on coal; but in 1867 a claim was made on the company for the payment of duty on all coke and bye-products consumed on the works as well as delivered for consumption in the city. The claim was resisted by the company, and hence another lawsuit, which so far has gone in favour of the company; but an appeal is in this case pending, which will also be stopped by the proposed arrangement.]

It has been further agreed that, if any reduction is made in the duty on oils used for illuminating purposes, a corresponding reduction shall be made in the duty on gas.

Referring to an application made to the Municipal Council for permission to lay down pipes for the supply of oxygen for consumption with coal gas, the directors state that they have obtained from the president of the council an opinion coinciding with their own, that the first article in their agreement with the city gives them the exclusive right to put down pipes, and applies to all gas constituting a fundamental element in the various modes of lighting and heating by gas.

This part of the report concludes by enumerating the advantages gained under the proposed new arrangements, which are, therefore, recommended to the shareholders for adoption.

The next part relates to the proposed alterations in the statutes of the company. The only one of these dwelt on by the directors is that by which it is proposed to divide the shares into two parts by the issue of a second kind of scrip, constituting one-half a profit share (*action de jouissance*), which will be negotiable separately. This scrip will be issued to the shareholders immediately. The scrip representing the share of capital will continue to take the whole of the October dividend (25 frs.), but in April will only take one-half that sum, the remaining half being allotted to the profit share. As the shares are drawn and redeemed, another profit share will be given in exchange for the scrip of the capital share, and those two shares will then enjoy the same rights as the single original share. The sale of these profit shares, it is supposed, will compensate the original shareholders for the diminution of value in the capital shares, and it is expected that they will be greedily sought after by small investors.

The resolutions expressing the agreement of the shareholders with the new arrangements were unanimously adopted; and it is now only necessary to obtain the sanction of the Council of State to give legal effect to the modified treaty.

Circular to Gas Companies.

With the exceptions of the notices given by the Corporations of Sheffield and Leeds for Bills to enable them to purchase the undertakings of the gas companies in those boroughs, or to establish competing works, the parliamentary notices given relating to gas-works are below the average in number and importance. A filibustering notice for the incorporation of a new gas company has been given in the case of King's Lynn, where the gas-works belong to a private gentleman, who has, however, had sufficient time to give a counter

notice for the incorporation of a company to purchase his works. At Yeovil the Local Board have, without any communication with the gas company, given notice for a Bill authorizing them to purchase the works, which the company are in nowise disposed to sell, and have consequently given notice for a Bill of Incorporation for themselves.

The old Aberdare Company are not inclined to be swallowed up by the Aberdare and Aberaman Consumers Company, and have declined the very liberal offer of the latter for the purchase of the undertaking, and determined to go for a Bill of their own, by which, if successful, Aberdare will enjoy the doubtful benefit of real competition in gas, until one or the other is beaten out of the field or both are exhausted.

The proposed new company for the purchase of Mr. Clift's works at Redditch have collapsed from the indisposition of the public to take the shares; and Mr. Clift—for a time, at least—remains in quiet possession of his undertaking. The valuers in the Bromsgrove case have disagreed as to the value of those works, and have formally handed the matter over to the umpire.

The sittings of the arbitrators and umpire in the case of the Dundee New Company concluded on the 9th, and the matter is now in their hands for adjudication. The differences between the valuers on the two sides are even greater than they were in the case of the old company, the annuities of Mr. Spice, Mr. Stevenson, Mr. Goddard, Mr. Penny, and Mr. Church, for the company, ranging from £5325 to £5683; whilst those of Mr. Barlow, Mr. C. Lee, Mr. S. Hughes, Mr. C. Stephenson, and Mr. Cleminshaw, for the Gas Commissioners, only ranged from £676 to £1040!

A meeting of the ratepayers was held at Torquay on the 27th of October, for the purpose of receiving a report of the committee appointed to negotiate with the gas company for the purchase of their works. As we have already mentioned (page 824), the Local Board offered £60,000, which was declined. The committee then requested the company to name a price. This also the company declined to do, but offered to sell at a valuation. The committee, however, expressed themselves adverse to arbitration, and the company persisting in their refusal to name a price, things for the present remain as they are. A formal resolution for the adoption of the report was carried unanimously, and an explanation that, by adopting the report, the ratepayers were pledged to nothing, seemed to give great satisfaction to the meeting.

The report of the liquidators of the County and General Gas Company, Limited, which will be found in another place, is a highly satisfactory document, and we may congratulate the shareholders on the improved position of the company. The liquidation is, in fact, turning out extremely well for the shareholders, and we have pleasure in admitting that the unfavourable opinion we expressed in the absence of authoritative information, and on the foundation of public rumour, has not been justified. It appears that the liquidators have succeeded in disposing of three of the works—viz., Lea Bridge, Walton, and Ware—at a loss of only £3482, by which they have been enabled to pay off the debentures and the mortgage debts, and 10s. in the pound to the general creditors. They have still to realize the Northfleet, Ely, and Pater works, valued at £33,670, so that when all the expenses of the liquidation are paid, there will be a considerable sum to return on the share capital of £39,135.

The first appeal to the chief gas examiner, under the 51st clause of the City of London Gas Act of 1868, has just been made by the Great Central Company under the following circumstances:—Sulphuretted hydrogen was reported by the City examiner on several consecutive days, and as the engineer of the company was able to show that none was passing the purifiers at the time, the company naturally felt "aggrieved" by the report, and hence the appeal. On investigation it was discovered that foul gas had by some means or other found its way into one particular holder, but how it was admitted is at present unexplained. The chief examiner in his report states his opinion that the admission may have been accidental, but holds, apparently, that as soon as the impurity was discovered it was the duty of the company to remove it; and therefore, while allowing that the presence of the impurity on the two first days may be considered "accidental and unavoidable," decides that the company must be held responsible for it on the subsequent days. Whether or not the Corporation will take steps to enforce the penalties incurred remains to be seen. This accident suggests that it would be advisable to test the gas of each separate holder as it passes to the mains, so as to arrive at once at the exact seat of the impurity, or to pass all the gas through an additional purifier on its exit from the gasholders.

We may mention here that the gas referees, under the powers conferred by clause 36 of the City of London Gas Act, have given notice that up to the end of this month the Chartered Company are to be allowed 10 grains of ammonia in 100 cubic feet. This, we believe, is while some alterations are being made in the purifying plant of the company.

Messrs. Hollway Brothers have, at the request of the Admiralty authorities, addressed a circular to gas companies requesting information as to the quantity of coal tar produced, and the use made of it. The object of the inquiry is to arrive at an estimate of the quantity of creosote that might be obtainable for burning purposes should the Admiralty adopt the article as fuel in the Royal Navy. We recommend gas companies to make the return, since it offers the prospect of creating a new market for what is in many places a drug. The day, perhaps, is coming when there may be great competition for this article. Recently experiments have been made on one of the French lines of railway, which have shown that heavy oil can be successfully employed for heating the boilers of locomotives, and the French Government are preparing for the application of it to marine boilers. A furnace contrived by M. Deville effects the most perfect combustion of the material.

A movement is now on foot among gas and water companies, working without statutory powers, towards obtaining a general Act by which they may be authorized to open streets and roads for laying gas and water mains. The movement originates with a little company at Hawkhurst, in Kent, which have, we presume, got into some difficulty in laying their mains. A memorial, which is to be presented to the Board of Trade, sets forth that the privileges asked for are similar to those already conceded to the promoters of harbour undertakings, and also to railway companies, by various Acts of Parliament, which give to a certificate of the Board of Trade all the force of an Act. The memorialists will, in all probability, be supported by Mr. Dodson, chairman of Committees of Ways and Means in the House of Commons, who, it will be remembered, has given notice of the following resolution, which is quoted in the memorial:—

> That where a gas or water company incorporated under the Joint-Stock Companies Act seeks compulsory powers to break up roads or streets, the Board of Trade should be authorized, with the consent of the local authority of the district or districts affected, and in the absence of opposition from any similar company serving the same district or districts, to issue, if it see fit, a certificate, as provided in regard to railways by the Railways Construction Facilities Act, 1864, giving to the company the powers required.

A large number of small companies will, no doubt, join in the movement, and, provided there are sufficient limitations in price and profits to protect the public against extortion when once the companies have obtained the desired powers, the measure may not be objected to by incorporated companies, though it will be necessary to watch it closely, and perhaps send a deputation to the Board of Trade.

The proceedings of the shareholders meetings of the unlucky Bahia Gas Company give rise to more reclamations than those of any other company whose proceedings are reported in our columns. At the last meeting certain statements were made (see page 861) respecting a Mr. Taylor, a former manager, who writes, *inter alia*—

> I am one of five or six who have been managers for the last eight years, but I am happy to say that there is no deficiency for coals and fittings in my time; and for the working during my time, witness the revenue. Mr. Kilkarie has done the several works that have been performed as per report: but they must know that they have greatly misstated this, as I carried on the whole of the works, and he attended to his books, and to them only. My testimonials, I am happy to say, are genuine and good; . . . and hundreds in Bahia will vouch for my character—even the President in council stated that I was doing everything I could to set matters right. This was only a short time before my dismissal.
>
> Respecting my power of attorney, which, amongst other duties, stated that I was to be cashier, I did not deem that (that) overrode any instructions I might receive from the board. On the receipt of their letter I conferred with Mr. Kilkarie, and in the end he refused to take the cash account until I had again written (to) the directors in London, which I did, and received for answer that it had to remain as it was until Mr. Henry Law visited Bahia (on his way to Rio Janeiro), when he would go into the matter. I certainly saw Mr. Law in Bahia, but he never visited the works while I was there. In conclusion, I can truly say that I did all for the benefit of the company.

Then comes the Brazilian Gas Fuel Company, who feel themselves aggrieved by a statement made by a shareholder (see page 861), that a Mr. Green was not in the employment of

the Bahia Gas Company at the time some experiments are alleged to have been made with the material of the fuel company, and that the stamp of the Bahia Company has been improperly used by the fuel company. On these points Mr. W. Knapp Henderson writes:—

With all due respect to this shareholder, I beg to say that Mr. Green was in the employment of the company at that time, and that his report, a copy of which is in my hands, is dated Nov. 11, 1868. This report was furnished to me by the directors of the Bahia Gas Company, and the quotation from it which is contained in the prospectus (of the Brazilian Gas Fuel Company) is entirely correct. In replying to the shareholder, the chairman stated that the directors of the Bahia Gas Company never saw the prospectus (of the fuel company) until it was published. I can only say that I left a copy of it with the secretary at least a fortnight before it was issued, in order that he might submit it to his board. With regard to the seal of the Bahia Company being upon the envelopes, I state most distinctly that the directors *did* authorize its use. The envelopes used were made by the Bahia Company's own stationer, under a *written order* from their secretary, and they were all addressed in their own office, where a large number which were not used still remain. The "turba" produces 12,000 feet of gas per ton, as can be seen from the reports of Mr. King and Mr. Green, as referred to by Mr. Stephenson. I am unable to say who charged the Bahia Gas Company 50s. per ton for the turba, but I know that it has been offered to them for very much less, and we shall be happy to give it them for half the money.

It is a pity that speakers at such meetings do not take the trouble to assure themselves of the perfect accuracy of their statements, and save us the trouble of referring to these reclamations and corrections.

A committee of the Metropolitan Board of Works have been considering the scheme for the amalgamation of the Chartered and City of London Companies. They complain that there is no provision made for the realization and conversion into money of the property and works which will not be required when the amalgamation is effected, and the Beckton works are completed; and they contend that a clause should be inserted, applying all the moneys realized to the reduction of the borrowed capital of the united companies. The Court of Common Council, it will be remembered, have expressed the same opinion.

Legal Intelligence.

COURT OF CHANCERY.—Lincoln's Inn, Nov. 12.
(*Before the* Lord Chancellor.)

PARKES *v.* STEVENS.

The plaintiff was the patentee of a globular, or rather spherical, lamp, the upper half of each lamp being formed of six panes of glass, each section forming the section of a sphere, and one of the six panes acting as a door, by being made to slide on a spherical frame within the next pane. The chief object of the improvements which formed the subject of his patent, which was granted in 1865, was described in the specification, which referred to a former patent, granted to him in 1862, as being "to produce a glazed lamp, the frame of which shall throw little or no shadow, and yet, at the same time, possess the requisite strength, and also facilities for lighting and cleaning the lamp." One especial difference between the lamps which were the subject of his original patent and those which formed the subject of the patent of 1865, which was the one in question on the present occasion, consisted in the revolving or sliding door, the door in the original lamp opening outwards, and being fixed by a hinge to the adjoining segmental rib. The defendant, who is a gas engineer, received a commission last year from Mr. Barry to manufacture lamps for Palace Yard. These lamps resemble the plaintiff's in being globular and divided into segments, one of which opens as a door; but this door opens in the lower instead of the upper hemisphere, as in the plantiff's patent. Another difference is that the defendant's lamp is fixed on a post, the plaintiff's being made for suspension, and one of the suspending rods serving as a gas duct. The plaintiff alleged the defendant's lamps to be an infringement of his patent of 1865 in respect of the sliding door. The defendant, on the other hand as well, denied this, and also disputed the validity of the patent, on the ground that the plaintiff's invention was not sufficiently novel or useful to be a proper subject for a patent, and, moreover, the specification was insufficient. It having been arranged, on the plaintiff's motion for an injunction coming on, that these cross issues should be tried by the court without a jury, Vice-Chancellor James had accordingly tried them, and decided that the lamp, taken as a whole, was sufficiently useful and novel to form the subject of a patent, and that the specification of 1865 being read, as the plaintiff was entitled to have it read, along with the specification of 1862, was, in fact, not insufficient. But the Vice-Chancellor also decided that the sliding door by itself was neither so distinctly claimed in the specification as the subject of the patent as to support the charge of infringement on the ground of that door being imitated by the defendant, nor, if it had been, that a sliding door would by itself have been enough to sustain a patent. The plaintiff appealed by way of original motion for a new trial against this part of the Vice-Chancellor's decision, and the defendant brought appeal, also, by way of original motion, for a new trial against the Vice-Chancellor's decision in favour of the patent generally.

Mr. Webster, Q.C., Mr. E. E. Kay, Q.C., and Mr. Everitt appeared for the plaintiff; Mr. Amphlett, Q.C., and Mr. Bagshawe for the defendant.

The Lord Chancellor thought the plaintiff's invention was a new and ingenious mode of transmitting light. He therefore dismissed the cross appeal which impugned the patent. He could not, however, allow that the alleged infringement on the part of the defendant had been made out. The sliding door was, no doubt, a useful addition to the plaintiff's spherical lamp, though rather as a means of avoiding the breakage of glass than for facilitating lighting and cleaning, but it could not by itself have formed the subject of a patent. His lordship, in fact, did not believe that the plaintiff originally contemplated claiming the door as, apart from the original combination, a thing to be protected by patent. Such a claim certainly could not have been supported, for the principle of closing doors by means of a cylindrical apparatus was thoroughly recognized before this patent was granted. The Lord Chancellor instanced fire-guards with circular backs and signal lamps as cases in which the principle had been previously applied. This appeal motion must, therefore, be dismissed as well as the other. There must be no costs on either side.

CLERKENWELL POLICE COURT.—Wednesday, Nov. 10.
(*Before Mr.* Barker.)

Mr. Ricketts, solicitor, applied for summonses against the Imperial Gaslight and Coke Company, at the instance of Mr. J. Murphy, proprietor of the Rose and Crown beerhouse, 302, New North Road, under the following circumstances:—Mr. Murphy, on entering the house, was required by the company to deposit the sum of £1, as security for the gas to be consumed in the following quarter. That sum Mr. Murphy paid, and the company now hold it in hand. The gas consumed in the quarter ending the 29th of September last amounted to £2 15s. 9d., which amount Mr. Murphy had tendered to the collector, and at the chief office, but it had been refused. Mr. Murphy then received a letter demanding not only the £2 15s. 9d., but £4 10s. for the present current quarter. Payment of this amount in advance was objected to, and hence the present application to compel the company to take less.

Mr. Barker inquired if Mr. Ricketts had a copy of the agreement signed for the supply of gas.

Mr. Ricketts said the company held the agreement, and did not furnish a copy; but, if a summons was granted, he should serve upon them a notice to produce. It provided, however, he believed, that the supply of gas might be discontinued upon a calendar month's notice being given by the consumer or by the company, and for payment for gas in advance, but that, he contended, must mean a reasonable sum, and the amount required was unreasonable, as compared with the previous quarter's consumption.

Mr. Barker thought not, seeing that the current quarter would be heavier than the previous one.

Mr. Ricketts said by the 16th section of the Metropolis Gas Act, 1860, it was provided that if the owner or occupier and the gas company could not agree thereon, the security to be given was to be determined by a magistrate, on the application of the owner or occupier and the gas company, or either of them; provided that if the security be the deposit with the gas company of a sum of money, the gas company should pay interest thereon to the consumer at such rate as the magistrate should determine. What he contended was, that the sum demanded by the company for the supply of gas for the second quarter was very exorbitant. If companies could be allowed to take such large deposits, they would be trading on the capital of their customers.

Mr. Barker asked if any offer had been made to the company after a demand had been made to the applicant for an increased deposit.

Mr. Ricketts said that in the first instance a demand was sent in for £7 15s. 9d.; the amount required in hand for the current quarter being put down at £6 10s. That sum was afterwards altered to £4 10s. The whole amount of gas consumed during the preceding quarter amounted only to £2 15s. 9d., and therefore he contended that a demand of £4 10s. for the current quarter was exorbitant.

Mr. Barker said that at present he was of opinion the amount demanded was not exorbitant.

Mr. Ricketts said that after the expression of opinion by the magistrate he would not press the point as to the amount of security to be assessed by him. He, however, thought the company were liable under the 21st section of the same Act for having cut off the supply of gas after the quarter due had been tendered, without giving a month's previous notice in writing to Mr. Murphy of their intention to discontinue the supply. The 21st section provided that no contracts should entitled the company "to discontinue any supply of gas, except for breach of the provisions of the Act by less than one month's notice in writing to the consumer, unless the rate due for gas shall be in arrear, in which case three days notice in writing to the consumer shall be sufficient." The amount actually due had been tendered, and three days notice only given before cutting off the gas. His contention was that a month's notice should have been given.

Mr. Barker said he was of opinion that "the rate due" meant the amount demanded for the current quarter, and that had not been tendered.

Mr. Ricketts contended that the words in question referred only to what was actually due, and not to the amount required in advance.

Mr. Barker, however, held otherwise, and refused the application.

LONGTON BOROUGH SESSIONS.—Monday, Nov. 8.
(*Before Messrs.* S. Bridgwood, J. H. Goddard, *and* T. W. Barlow.)

OFFENCE AGAINST THE LONGTON GAS COMPANY'S ACT.

Joseph Wright, beerseller, Lockett's Lane, was charged with having unlawfully made a connexion of a gas-pipe to a meter supplied with gas from the Longton Gas Company, without having given twelve hours notice in writing of his intention to do so, according to the 43rd section of the gas company's Act. Defendant had thus rendered himself liable to a penalty of not less than 40s.

Mr. J. M. Darwin, the company's manager, stated that, defendant failing to make the customary deposit as security for the payment of his gas-rate, the meter was disconnected. Defendant's wife afterwards went to the company's office, and said that the landlord had become security. This was considered satisfactory, and, upon the representation made, a man was sent to the defendant's house to make the connexion with the meter. He found, however, that defendant had already made the connexion, and herein lay the offence

Defendant pleaded guilty, but said he was ignorant of any wrong-doing in himself getting the connexion made.

Mr. Goddard asked Mr. Darwin if the gas company would not be satisfied with this publicity of the proceedings, as the defendant evidently acted in ignorance of the Gas Act requirement. If the magistrates must convict, they could not impose a less penalty than 40s.

Mr. Darwin said that if the defendant would pay 10s. into the poor-box the gas company would forego the penalty, which was payable to themselves.

After some further remarks, Mr. Darwin concurred with a suggestion from the bench that defendant should only be required to pay the costs, the publicity of the case being likely to produce the effect the company desired—to show gas consumers that they could not connect or disconnect their meters at will.

SHEFFIELD WATER-WORKS COMPANY.

The inquiry into the new regulations which the water company are desirous of bringing into force was resumed on Tuesday, Nov. 16, at the Town-Hall, before Mr. T. Dunn and Mr. J. Jobson Smith.

Mr. Pollock and Mr. Macrorie appeared for the company.

After a short discussion as to whether on the last occasion rule No. 1 was settled, and it being decided that, although certain words had been

taken out by consent, and the company had called the whole of the evidence which they considered necessary, the rule had not been agreed to, the magistrates proceeded to consider regulation No. 2, which is as follows: "No pipe (except when and as otherwise authorized by these regulations, or by an authority given by a memorandum in writing, signed by the surveyor or other duly authorized officer of the company) shall be used, laid, or fixed by any person other than the company for the conveyance of or in connexion with the water supplied by the company, unless the same shall be of lead, and of at least the weight following—that is to say: If the internal diameter of such pipe shall not exceed ½ inch, 5 lbs. for every lineal yard of pipe; if such diameter shall not exceed ¾ inch, 7 lbs. for every lineal yard of pipe; if such diameter shall not exceed ⅞ inch, 9 lbs. for every lineal yard of pipe; if such diameter shall not exceed 1 inch, 11 lbs. for every lineal yard of pipe; if such diameter shall not exceed 1 inch, 16 lbs. for every lineal yard of pipe; if such diameter shall not exceed 1¼ inch, 22½ lbs. for every lineal yard of pipe. Provided that where the internal diameter of any such pipe shall exceed 1 inch, the company may require the same to be of cast iron, and of such weight as they may consider necessary. Every joint made in any pipe used for the conveyance of or in connexion with the water supplied by the company shall be of the kind called a plumbing joint, and not a blow-pipe joint."

Mr. POLLOCK remarked that the company, in asking that they might have power to enforce this regulation, were not asking for anything that was new. They simply asked for piping of a character which plumbers and most experienced men said was necessary for the purpose required. They asked that the regulation might be enforced for the safety of their works, and for the safety of everybody connected with them. Consumers whose pipes were strong and had been well joined would not be interfered with, but only those whose work had not been well done. He should call evidence of a practical character which would show that in other towns where there was a constant pressure, as a matter of principle and usage, pipes of the thickness which the company now required had been adopted. He did not know to what extent his learned friends objected to the rule.

Mr. BLACKBURN said the objection which he had to urge against it was, that it was unreasonable, inasmuch as it should apply only to pipes hereafter to be laid down or repaired; and that the words "shall be used" ought to be struck out.

Mr. POLLOCK said he was with his learned friend in the spirit of his objection, if the company were calling upon the bench to do that which should be altogether retrospective, if they were requiring people to lay down pipes which they had not hitherto used. They were only asking for that which had answered well when resorted to in towns where there was a constant pressure, and which when done without inconvenience had arisen.

Mr. DUNN remarked that the company were not giving any increased pressure. They were simply giving an increased supply at the same pressure as that to which the town had been accustomed for years. That being so, he was at a loss to know why pipes which had borne 10 hours pressure should not be able to bear 24 hours pressure; why, in fact, the pressure should not remain the same.

Mr. POLLOCK said he was in a position to show that the moment a constant supply was commenced a great waste of water occurred in consequence of defects in the taps, cocks, and pipes, and that, unless some entire change took place, it would be impossible to keep up a constant supply. He should also be able to show that in other towns where what the company asked for had been carried into effect, a constant supply had been kept up without any great difficulty. They were simply asking for that which a tradesman would say was the proper thing to do; and he would invite the attention of the magistrates to the evidence of those who had known the actual working of the rule, and who did not give merely scientific evidence.

Mr. *Hawksley* recalled, and examined by Mr. POLLOCK.

The rule under consideration refers mainly to the thickness of the pipes. I was the originator of the system of constant supply, and have had the matter before me for nearly 40 years. I have therefore had 40 years practical knowledge, and it is from that experience, and not from scientific knowledge, that I speak. A pipe which would bear a pressure for 10 or 12 hours would, no doubt, bear a pressure of 24 hours or 24 years—that is, so far as mere theoretical strength went; but the lighter pipes very frequently burst from a great variety of causes. One of the results of that is, that the water has to be turned off in order to do the necessary repairs, and a constant supply to everybody is rendered impossible. Water companies, when the system of constant supply was in use, were obliged to have pipes of strengths in excess of those which would answer tolerably well with the intermittent system. The regulation is in force at Nottingham, and has been found to answer exceedingly well. The pressure in Nottingham is lighter than it is in Sheffield. The regulation is absolutely necessary and essential for the system of constant supply.

Mr. BLACKBURN: But do you think it absolutely necessary that the regulation should have a retrospective effect?

Witness: Yes, and I say that as a practical engineer.

Examination continued: It is reasonable to expect the consumer to take up pipes and put others down at his own expense, because he is to have the benefit of a constant supply. I am not aware that the pipes already in existence have been passed by the company. They have been allowed to remain, it is true, because, I suppose, they could not prevent themselves. It is very likely that the company have themselves put down pipes not of the thickness which they now require; but that was on the system of an intermittent supply. I have myself examined pipes in Sheffield which are totally unable to bear the pressure of a constant supply. The pipes in some of the streets in Sheffield are all sorts of thicknesses. The weight of the pipes which the water company require is not excessive, for this reason: the pressure in Sheffield is or will be greater than the pressure which exists in towns in which these weights have been found necessary. I do not know what the weights are in Manchester, but Manchester is far from a perfect place as regards water-works. There used to be a company there, but their works were bought many years ago by the corporation, and many things have not got right yet.

Mr. BLACKBURN: The regulation says, "any joint made in any pipe used for or in the conveyance of or in connexion with the water supplied by the company, shall be of the kind called a plumbing joint." Why do you say that?

Witness: Because that is the only sound joint for the permanent resistance of pressure.

In answer to further questions, *witness* said in the case of a straight downfall-pipe to a cistern, where there was no pressure, he would not enforce the rule as to a plumbing joint, if the blow joint was working well. This, however, he considered would be an exceptional case.

It was ultimately agreed, so far as Mr. Blackburn was concerned, that the words "under pressure" should be inserted after the word "company;" that the word "lead" should be inserted after the words "joint made in any;" and that the clause should end at the words "plumbing joint."

Cross-examined by Mr. BARKER: Pipes burst in proportion to the time that the pressure is upon them; but apart from that, it is inconsistent with the principle of a constant supply to have pipes which burst at all, because if the water is frequently shut off in order to make repairs, it ceases to be a constant supply. Therefore, in all cases of a constant supply, we employ pipes of such a reasonable strength that they will not be likely to burst, or at all events in such numbers as the lighter ones would. During the hours of the day there is a great draught on the pipes, which diminishes the pressure very much indeed. The greatest pressure is at night, when but very little water is drawn. By a constant supply the pressure is greater for a long time; but there are moments—for instance, in the evening—when, by the intermittent system, the pressure may be as great as by a constant supply. The change to heavier pipes, instead of being instantaneously effected, as the language of the rule would perhaps imply, will go on slowly and gradually for years, and it will perhaps take ten years, or even more, before the whole of the pipes are altered.

Mr. BARKER: Then, as a result of your statement, I am to conclude that you would not advise the company to enforce this rule all at once?

Witness: I should think them downright mad if they attempted such a thing. I can't believe any company in existence would do so.

In answer to further questions by Mr. BARKER, *witness* said he believed he was not exaggerating when he said it would take 20 years before all the pipes in the town were put upon a proper footing. He was not in favour of the rule being modified by the introduction of the words "in all cases where it shall be found necessary to replace or renew pipes they shall be of this stipulated thickness," because a discretionary power would be taken out of the hands of the company, and because he believed it would lead to much confusion and dispute as to what a "pipe" was, and when it was "necessary" to have it replaced. The pipes at present in use in Leeds were not of sufficient thickness. He was engineer to the water-works at Norwich, where the occupier of a £10 house pays 10s. a year for water, the occupier of a similar house in Sheffield paying 12s., subject to a temporary addition of 25 per cent. He did not know what the expense would be to the consumers, as an aggregate body, if the regulation were passed; but he denied that what the public had to pay was too small a matter for the company to take into their consideration.

Mr. IRONSIDE said he objected to the prohibition of blow joints, which were simple, easy to be made, and equal in efficiency to plumbing joints; whilst plumbing joints were difficult to make in some positions, always more expensive, and never stronger.

Witness disagreed with Mr. Ironside in all these particulars, and, in answer to questions put to him, he denied that there was any motive on the part of the company except to prevent a waste of water by this regulation.

Mr. IRONSIDE handed to witness a circular which had been sent out by the directors, in which they said they were willing to undertake plumbers work; and he asked if that did not show there was a motive.

Mr. DUNN replied that the circular did not show there was a motive for what the company were now doing. If a water consumer wished the company to do any plumbing work they would do it, but they did not claim the work as a right. He did not see that that affected the question.

In re-examination by Mr. POLLOCK, *witness* stated that the loss which the company wished to avoid would take place if in every instance they waited till a pipe burst. Both plumbers and blow joints were in use in the town. The latter would do very well for gas-pipes; but for water-pipes, in which the water was under constant pressure, they would not. When a pipe had to be repaired, the water was sometimes compelled to be shut off, not from a few houses, but from a whole street.

In answer to the BENCH, *witness* stated that in Sunderland, Stockton and Middlesborough, Nottingham, Leicester, and Derby there was a constant water supply, and that the service-pipes in those towns were all of the high weights mentioned in the regulation. In some cases the pipes were laid at the cost of the company, and in others at the cost of the consumers. Where he had introduced new works, the pipes had been laid at the expense of the company. The cost had been considered in the capital of the companies, and had come into his estimate of what they would have to expend. In the towns he had mentioned, if the pipes were laid by the consumers, they were subject to the approval of the company. The plumbing joint was uniformly considered the best joint for water-works. In Norwich the service-pipes were laid by the company, and belonged to them.

J. G. Blackburn, Esq., examined by Mr. MACRORIE.

I am a civil engineer at Oldham, and am one of the engineers to the Oldham Corporation, and the engineer of the Ashton and Stalybridge Water-Works. I have read the regulation now under consideration, and see no objection to the weights of the pipes proposed, and especially with regard to the common sizes. On comparing them with the weights used in Oldham, I find that those in Oldham are a little lighter; but I am of opinion that the weights proposed, certainly up to the ¾ inch, are very reasonable. I will not give the same opinion with regard to the inch piping, because I think an inch pipe should be made of iron instead of lead. The pressure at Oldham is similar to that at Sheffield, and, like the pressure at Sheffield, it varies very much. With regard to plumbing and blow joints, no engineer would hesitate to specify the former as being decidedly the best. The latter is an uncertain joint, and is unsuited for water-pipes.

Cross-examined by Mr. BARKER: As an engineer, I do not see any difficulty in the way of a proviso being added to the regulation, to the effect "that no consumer shall be compelled to lay or affix any new pipe unless that which already exists shall be proved to be defective."

By Mr. IRONSIDE: The principal reason for having pipes of the thickness named in the regulation is that they do not require such constant repair, and to have such pipes I consider is as much to the interest of the consumer as to the company.

In answer to Mr. BARKER, *witness* said it would be an advantage for a stop-cock to be placed inside every consumer's house or premises, as it would prevent a leakage taking place inside. If the leakage, however, took place between the stop-cock and the main there would be no advantage in the stop-cock, as it could not prevent a waste of water.

Mr. *Chrimes*, examined by Mr. MACRORIE.

I am a member of the firm of Guest and Chrimes, Rotherham, engineers and have had considerable experience in the fittings used in water-works I have read this regulation, and under the peculiar circumstances of Sheffield, and that water is to be supplied under constant pressure, I consider that the weights proposed are very moderate indeed. It is undoubtedly the fact that stronger pipes are required for a constant pressure than for an intermittent pressure, even though the pressure may be the same. [Witness produced the regulations in force in Leeds, Bradford, Worcester, Coventry,

Leicester, Darlington, Edinburgh, and other places, and compared the weights of some of the pipes in use in those towns with the weights here asked for. He expressed his opinion that plumbing joints were infinitely superior to blow joints.]

Mr. IRONSIDE: Then would you be surprised to hear that only blow joints are put to their meters by the company?

Witness replied that the circumstances were different. In the case of meters the lead was attached to a brass pipe, which made the joint stronger than if two pieces of lead were joined.

Mr. POLLOCK said he had a number of other witnesses, but as they would give evidence similar to that already produced, he thought it was unnecessary to call them. He would therefore proceed with regulation No. 3, which is as follows:—"No pipe shall be used for the conveyance of or in connexion with the water supplied by the company, which is or may be laid or fixed through, in, or into any sough, drain, ashpit, or manure-hole, or through, in, or into any other place where the water conveyed through such pipe may be liable to become fouled or to escape without observation, except where such sough, drain, ashpit, manure-hole, or other place aforesaid shall be in the unavoidable course of such pipe; and then in every such case such pipe shall be passed through an exterior cast-iron pipe or box of sufficient length and strength to afford due protection to the water-pipe, and to bring any leakage or waste within the means of easy detection." No specific objection had been raised against this clause, and therefore he should be content to leave himself in the hands of the court, simply remarking upon its reasonableness.

Mr. BLACKBURN said that, although the regulation was in the main reasonable, it cast a very great expense upon the consumer. He suggested an alteration in the wording of the regulation, which was not accepted.

Mr. IRONSIDE had no objection to the regulation. He thought it very proper that water-pipes should not be carried through a manure-heap.

Mr. *Hawksley* said he had read the regulation, and in his opinion it was absolutely necessary to secure the purity and the non-escape of the water. Without the protection thus afforded, there were places through which pipes might pass and the water be wasted or fouled. If the regulation were altered as suggested by Mr. Blackburn, the water might be seriously fouled, and yet not be within the rule. As, for instance, if the pipes passed through a slaughter-house.

The consideration of the regulation then closed.

Mr. POLLOCK read the fourth regulation:—"Every pipe and all apparatus which shall hereafter be intended to be used, laid, or fixed for the conveyance of or in connexion with the water supplied by the company, and the intended position and mode of laying and fixing the same, shall be inspected and approved by the surveyor or other duly authorized officer of the company before such pipe or apparatus shall be connected with the pipes of the company, or with any pipe used for the conveyance of or in connexion with the water supplied by the company; and if the same pipe or apparatus, or the intended position or mode of using, laying, or fixing the same, shall not be in accordance with these regulations, or shall not be in accordance with the provisions of any Act of Parliament relating to the company, the same shall not be connected with the pipes of the company. And in case any pipe or apparatus now used, laid, or fixed for the conveyance of or in connexion with water supplied by the company shall be found to be used, laid, or fixed in a manner not in accordance with these regulations, or not in accordance with the provisions of any Act of Parliament relating to the company, the use of such pipe or apparatus shall be discontinued within three calendar months from the date on which these regulations shall be allowed by the justices, who are to allow the same under the provisions of the Sheffield Water-Works Act, 1860." He said the regulation was of a general character, and the objections to it were very similar to those urged against a previous regulation—namely, that it was unreasonable, because it ought only to apply to pipes or apparatus hereafter to be laid down or fixed. The struggle between them would be whether the regulation should apply to fittings already down, and to be used in the future, or only to those to be put down in the future.

Mr. *Hawksley* said the regulation was equally for the benefit of, and equally necessary for both the company and the consumers. The object was to prevent putting down pipes which were inconsistent with the rules and regulations of the company as well as of the Act of Parliament. It was necessary, before the pipes were used, that they should be inspected and approved of by the company's surveyor, and thereby fractures and leakages would be to a great extent averted. In the first instance a few pipes might be disapproved of, and they would have to be replaced; but in a short time plumbers would get into the habit of putting down good pipes. There were, however, some words in the regulation which he did not think were altogether necessary.

Cross-examined by Mr. BARKER: The practical effect of the first part of it was not to give to the company's surveyor the power of saying when a person was erecting a house where the water-fittings should be placed. It simply empowered him to see that the rules and regulations of the company had been carried out.

A lengthy discussion took place upon this point, Mr. BARKER contending that the company were asking in the regulation for power to cut off the supply of water at the discretion of the surveyor.

Mr. BARKER asked witness whether he approved of the latter part of the regulation requiring the discontinuance of pipes or apparatus which were not in accordance with the regulations, within three calendar months from their being passed.

Witness replied that the use of such pipes or apparatus could not be discontinued within that time. They would only be discontinued from time to time as they were found to be fouling or wasting the water, or doing something else injurious either to the company or to the public.

Mr. BARKER said that, as the clause stood, a person might be summoned for a breach of it.

Mr. POLLOCK suggested the leaving out of the words "three calendar months," simply saying that such defective services should be discontinued.

Mr. BARKER intimated that he should propose to the company some alterations in the regulation, and, if they were not accepted, they could come before the court with them.

Mr. BLACKBURN, referring to the words "intended position," asked whether, supposing an architect had laid down pipes in a house according to the wishes of the owner, the surveyor had power to object to the arrangement.

Witness said he had not, unless the pipes were laid down contrary to the rules and regulations. A person was not compelled to explain to the surveyor the intended position of the pipes before he could lay them down. He admitted that the meaning of the word "intended" was not very distinct.

Mr. BLACKBURN said his construction of the regulation was, that before pipes could be laid down their position must be shown to the surveyor, and his approval obtained before the work could be carried out.

Witness said he attached no such meaning to the regulation. In answer to Mr. Blackburn, he mentioned other towns in which similar regulations, though somewhat less stringent, had been adopted. In reply to Mr. Ironside, he said he had nothing to do with the appointment of the surveyor to the company, and knew nothing of his qualifications.

Mr. DUNN, referring to the objection of Mr. Hawksley to the regulation as it stood, asked the learned counsel on both sides to consider it, and to come before the bench next day with such a modification of it as there would be a disposition to accept.

Mr. POLLOCK promised to do his best, and hoped the other side would give them their views upon the matter, and let them know what they wanted.

Mr. DUNN said that Mr. Hawksley, who was a practical witness, had stated that there were points in the regulation which could be improved, and if the learned counsel could not agree as he had suggested, to-morrow the bench would ask him what were the points to which he specially alluded.

C. E. Cawley, Esq., M.P., said he was a civil engineer at Manchester. He considered the fourth regulation was a reasonable one, and one which was absolutely necessary. He saw no difficulty in the words "shall hereafter be intended to be used." On the contrary, it was an advantage to persons intending to put down fittings that the inspection should take place before they were fixed, as thereby the expense of alteration would be saved. Regulations similar in spirit were in force in other towns with which he was acquainted.

In reply to Mr. BLACKBURN, *witness* said he thought it reasonable that the company should have power to object to internal fittings if they believed the result would be loss of or injury to the water. In carrying out the regulation he was in favour of the consent of the surveyor being obtained even to the saying what form of tap should be used. The surveyor would have to be guided by his rules and regulations, he would not be allowed to act on his own discretion.

Mr. J. J. SMITH asked whether the company would be prejudiced by the omission of the words "intended position," and, if so, in what way.

Witness replied that he read the regulation as a whole. By the omission of the words the company might be prejudiced in certain cases.

Mr. DUNN said they could not pass any regulations which would override the General Act.

In reply to Mr. IRONSIDE, *witness* said he did not think the borough surveyor was the proper person to see to the carrying out of the regulations.

Mr. AYRES, manager to the Norwich Water-Works Company, said that when those works were first established they were unable to supply the district with water. The consumption was 40 gallons per head per day, and, although they were supposed to give a constant supply, they were compelled to shut it off for six or eight hours per day. In consequence of the deficiency, they introduced rules and regulations similar to those produced, and the effect was that at the end of six years they had a most bountiful and constant supply, but the consumption was only 14½ gallons per day. The regulation under consideration met the requirements of their case. He considered the words "intended position" were alike in favour of the company and of the consumer. He had experienced no difficulty in carrying out the regulation.

Mr. J. J. SMITH could not see that the company would be at all prejudiced by the omission of the words "intended position."

Witness replied that without those words it would have been impossible to have given a constant supply at Norwich.

WEDNESDAY, NOV. 17.

Mr. POLLOCK said that, with the view of meeting the wish of the bench, as expressed during the discussion upon the fourth regulation, he proposed to leave out the words "intended to be used" in the second line, "intended" in the fourth line, "and approved" in the fifth line, "intended" in the tenth line, and "within three calendar months from the date on which these regulations shall be allowed by the justices, who are to allow the same under the provisions of the Sheffield Water-Works Act, 1860," at the end of the clause.

Mr. BLACKBURN said he could not accept even the amended regulation.

Mr. POLLOCK having remarked that he should be prepared at the proper time to meet Mr. Blackburn's objection, the discussion on this regulation closed

With reference to regulation 5—"No drawing-cock or stop-cock shall be used or fixed for the conveyance of or in connexion with water supplied by the company, unless the same shall be strong and of hard brass, and of a kind to be approved by the company, and every drawing-cock and stop-cock shall be a screw-down cock, with leather faces, not liable to turn round on the seat,"

Mr. BLACKBURN asked for the production, according to notice, of a plan showing the position of the underground mains of the company.

Mr. POLLOCK declined to produce the plan at that stage of the proceedings, and the bench made a note of the request and of the objection.

Mr. *Hawksley* was then called, and said this regulation was in almost universal use in other towns.

Mr. BLACKBURN and Mr. BARKER raised no objection to the screw-down cock, providing the regulation was only to apply to fittings hereafter to be put down.

Witness explained the advantages of the screw-down cock. Where there was a constant supply it prevented an enormous waste of water, and an injurious shock to the pipes. It was more economical, as one good screw-down cock would last out five of the ordinary ground plug-cocks, and in changing them there was no necessity for turning off the water.

In reply to Mr. BLACKBURN, *witness* mentioned a number of different makes of the screw-down tap, all of which, in various degrees of perfection, would answer the purpose aimed at. Pressed as to whose he considered the best, he said that manufactured by Messrs. Guest and Chrimes was much superior to any other. The Manchester Corporation had enforced the change of the taps from time to time at the expense of the consumer. He was not aware how many pipes had burst in Sheffield through the use of the bib-cock during the month there was a constant supply of water.

In reply to Mr. BARKER, *witness* said it would take from five to ten years to substitute for the ordinary tap now in use the one recommended. Assuming that the regulation was passed, the security that consumers would not be at once called upon to alter their present fittings in conformity with it was the ordinary practice pursued by all water companies. The failure of the common tap increased in proportion to the pressure put upon it.

Re-examined by Mr. POLLOCK, *witness* said there was no intention on the part of the company to set up one maker's cock over another.

Mr. BLACKBURN asked what objection there could be to the following addition to the regulation:—"The company will not prefer one kind of screw-down cock to another, if the same shall be sufficient to prevent bursting or leakage."

Witness replied that such an addition was unreasonable. He could mention fifty different cases in which the rule had been made and acted upon, but nowhere prejudicially to the consumer. What was suggested was that the water company did not understand their business, and that they would act with harshness and indiscretion towards the public. The carrying out of a rule similar to that suggested by Mr. Blackurn, at Edinburgh, had resulted in the total failure of the supply.

By Mr. POLLOCK: He had never heard of a complaint against a water company for preferring one maker's cock over another.

Mr. *Cawley* said he entirely approved of the regulation, and thought it ought unquestionably to be in existence. He had found by experience that the screw-down tap was the most efficient that could be used. A similar regulation was in force at Salford, and he had never heard a complaint against it. He objected to the proposed addition to the regulation, because the rule should be so clear that a person having to put down fittings should know precisely what sort were required by the company. He admitted that there should be special exceptions to the regulation, but they ought to appear in an independent form. Where existing fittings were in good repair, he would not apply the regulation in all its stringency. He had not calculated the cost of putting down taps of the sort described throughout the town.

Mr. *Blackburn* (Oldham) said a similar regulation to that under consideration existed in substance and in practice in many other towns, and it was essential that there should be such a rule. He had never heard a complaint against it. No difficulty had arisen as to whose tap should be used. It would be unreasonable to exercise the regulation very stringently.

Mr. *Ayres* (Norwich) spoke in favour of the regulation, and said in Norwich, where it was in use, the inhabitants would be very sorry to return to the old tap.

On consideration of regulation 6, which is as follows:—"Every cock which shall be used or fixed for the conveyance of or in connexion with the water supplied by the company, and which shall be placed in a court or other exposed place, shall be protected by an iron casing, and be made to open with a key,"

Mr. POLLOCK said there was no objection, except from Mr. Ironside.

Mr. *Gunson*, the resident engineer of the company, spoke in favour of the guard he had invented, or some similar protection. He said the letting of pipes into walls was not so good a protection as a guard.

Mr. *Hawksley* supported the regulation, and said the iron guard referred to was a great improvement upon any other he had seen. Injury to pipes was occasioned by frost, by the pressure of the water, and by being struck by buckets and pails, and leakage was the result. He did not think the company ought to be at the expense of the guards.

On regulation 7—"No underground cistern shall be used for the storeage or reception of water supplied by the company, unless the use of such cistern shall be allowed by a memorandum in writing, signed by the surveyor or other duly authorized officer of the company,"

Mr. POLLOCK said the objection to this regulation was, that it was unreasonable and unnecessary to disturb existing cisterns, but the company felt it necessary, having a regard to their own interest, to object to them.

Mr. *Hawksley* stated that underground cisterns, which were not in general use in other towns, were most objectionable. They not only fouled the water, but frequently allowed it to waste for years without its being discovered. Where there was a constant supply of water, underground cisterns were unnecessary.

By Mr. BLACKBURN: If such cisterns were made tight, to the satisfaction of the company, there could be no objection to them. Overground cisterns were much better, even when the supply was intermittent. He did not object to underground cisterns if they were on a level with the reservoirs. The regulation ought to have been so worded as to give the company power to do away with any of the cisterns without any regard to time. There was no guarantee, if the regulation were passed, that it would not be put into force at once; but he did not believe it would, as the company would act fairly and honourably towards the consumers.

By Mr. BARKER: The advantage of the underground cisterns was, that the water was a little cooler in summer, and less likely to freeze in winter. In the majority of cases there was no saving of space in cottage houses by having underground cisterns. There could be no objection to such cisterns where they were perfect, easy of inspection, and the water not allowed to become foul. He was aware that any person allowing his cistern to continue out of repair was liable to a penalty not exceeding £5. The company's surveyor had power to enter a house and inspect an underground cistern. For a £50 house he estimated that a cistern capable of holding 250 gallons was required, and the cost would be about £10.

By Mr. IRONSIDE: The present regulations were not based upon the supposition of an intermittent supply. The intention and object of the regulations were to enable the company to give a constant supply, and unless they were passed a constant supply was impossible.

By Mr. POLLOCK: There were exceptional cases, in which underground cisterns ought to be allowed.

Mr. *Gunson* said there were 1014 underground cisterns in Sheffield, and, as the surveyor of the company, he had inspected a great many of them. Their condition was very bad indeed, and, from the nature of their construction, it was impossible to make them water-tight except at very serious expense. In many instances the defects in the cisterns could only be discovered by a practical man. In 1860, to ascertain the quantity of water flowing into an underground cistern, he put down a meter, and found that in twelve hours the quantity was 3592 gallons. The cistern was repaired, and the quantity that then flowed in during the same period was 97 gallons. The larger quantity had run to waste, owing to the leakage of the cistern and the defective ball-cock. He had found many other cisterns since where the leakage was quite as great. By the use of the underground cisterns from 70 to 80 times as much water was wasted as was consumed. There would be no difficulty in removing the underground cisterns and fixing stand-pipes in their place.

Cross-examined by Mr. BLACKBURN: Many persons had received notice to repair their cisterns. Some of the underground cisterns were only fed at night when there was very little friction and pressure, and in those cases they ought to be continued, as stand-pipes would be of very little use. The consumer would have to be at the expense of the stand-pipe, which would cost about £1. The cisterns were being, in consequence of the great cost of keeping them in repair, gradually superseded by the stand-pipe.

By Mr. POLLOCK: The old material would cover the cost of the new stand-pipe and cock, and he should be very glad to take a contract to substitute the one for the other.

By the BENCH: It would not be reasonable to call upon the company to make the alterations.

Mr. *Ayres* said that when Norwich was first supplied with water by a company a great many cisterns were constructed underground. A regulation similar to the one proposed was adopted, and in five years every one was done away with. There was not an underground cistern now in the town. In place of the cisterns, taps with guards had been adopted. In many instances the sum allowed for the old material exceeded the cost of the new. It was unreasonable that the underground cisterns should be allowed to exist. They created unnecessary waste, which was difficult of detection; they gave trouble, and rendered the water impure. A similar regulation to the one under consideration was in course of being carried out at Yarmouth.

Mr. BLACKBURN asked if there would be anything unreasonable in having words to the following effect added to the regulation:—"Provided that the company shall not do away with the present system of storeage and reception of water until they have, for a time to be fixed by the magistrates, given a *bonâ fide* constant supply of water."

Witness replied that such an addition would be most unreasonable, as it would be impossible for the company to give a constant supply while a thousand underground cisterns continued in use. It was unreasonable to allow such cisterns even under the present intermittent system.

By Mr. BARKER: At Norwich the inhabitants were compelled to conform to the regulations. There was no appeal to the magistrates. The existence of the cisterns was alone sufficient to prevent the company from giving a constant supply. It would take, perhaps, five years to do away with the whole of them; but he did not say that it would be so long before the inhabitants could look for a constant supply. As the cisterns were removed and the waste avoided the supply would be increased.

By Mr. IRONSIDE: He did not think the company's Act of 1860 gave them the necessary power to prevent the waste of water by cisterns. He had inspected cisterns in Fitzwilliam Street and other parts of the town, and he found the water running to waste as fast as the taps could deliver it.

By Mr. POLLOCK: An attempt was made to give a constant supply at Norwich, but they could not do so until after the underground cisterns had been removed. If the most defective cisterns in Sheffield were removed, a constant supply might be given in twelve months.

The inquiry was then adjourned.

Miscellaneous News.

COUNTY AND GENERAL GAS COMPANY, LIMITED.

IN LIQUIDATION.

A Meeting of the Shareholders of this Company was held at the Guildhall Hotel, London, on Friday, Oct. 29, to receive from the liquidators, Messrs. White and Stephenson, an account of their proceedings under the liquidation.

On the motion of Mr. BLYTH, solicitor to the liquidators, E. H. J. CRAUFURD, Esq., M.P., the late chairman of the company, was unanimously invited to preside.

Mr. WHITE read the following report:—

The liquidators have the pleasure to present to the shareholders their report of the progress of the liquidation since the date of their appointment. For this purpose they consider it desirable to set forth the position of the company on the 31st of December, 1867, as it appeared in the books, the order for winding up bearing date the 31st day of January, 1868.

Dr. BALANCE-SHEET, *December* 31, 1867.					*Cr.*		
To capital, viz.:—					By value of works, as shown by the books of the company	£64,428	13 10
Ordinary	£29,135	0	0		Stocks on hand	360	12 1
Preference	10,000	0	0		Debts due to the company	4,426	1 3
	£39,135	0	0		Balance (deficiency)	1,198	5 2
Debenture bonds and interest	10,838	3	10				
Loan on mortgage and interest	8,168	4	6				
Sundry creditors	12,272	4	0				
	£70,413	12	4			£70,413	12 4

This balance-sheet shows a deficiency in the company's assets of . . £1198 5 2

but, upon investigating the accounts, the liquidators discovered there were further claims upon the company amounting to 909 8 2

This further sum, £909 8s. 2d., comprises the amount of Mr. Durrant's bill of costs against the company—£414 19s. 10d.—subject to taxation, including the parliamentary and other costs of the Leyton Gas Bill.

Messrs. Cutler and Sons claim in respect of the Ware contract for tank and gasholder, which claim the liquidators, after considerable negotiation, succeeded in reducing from £341 7s. to £188 19s. 10d.

An amount of £176 16s. 6d., paid in settlement of the actions and costs brought against the company by Mr. Martineau and Mrs. M'Donald for compensation for damage caused by explosion of gas at Walton, the difference consisting of numerous smaller items for which accounts had not been rendered before the books were closed.

And bad debts taken as good assets for 163 9 7

To these amounts the solicitors costs of the petition for winding up, to the date of the winding-up order must be added, in order to arrive at the actual position of the company at the commencement of the liquidation—viz. 1591 13 5

Showing a deficiency of £3862 16 4

That is taking the works at the various stations as of the value at which they stood in the company's books, without making any deductions for loss on realization.

One of the earliest acts of the liquidators was to ascertain the commercial value of the company's property at each of their stations, and finding that a valuation of the Lea Bridge works had recently been made by Mr. G. W. Stevenson, they resolved to adopt his estimate for those works, which was £13,437. They then instructed Mr. Alfred Penny to value the remaining works, except Pater, which was leased to Mr. G. W. Stevenson. His valuation was as follows:—Northfleet, £4167 10s.; Walton, £9052 0s. 2d.; Ware, £6040 7s.; Ely, £16,088 8s. 6d.

The liquidators have since succeeded in disposing of the following stations—viz., Lea Bridge, Walton, and Ware:—

Lea Bridge, to Mr. Stephenson Clarke, as from Lady Day, 1868, for the sum of £13,500 0 0

And the gas and meter rentals, £1046 16s. 5d., less allowance for bad debts and collections, £26 19s. 9d. 1,019 16 8

Walton, to Messrs. E. H. J. Craufurd and E. W. Kershaw, for . . including all implements, stock, &c. (on the works), on Aug. 15, and gas-rentals as from July 1, 1868. . . . . 10,000 0 0

And a further sum, for coals on order, of 346 2 6

Ware, to the Ware Gaslight and Coal and Coke Company, Limited, as from Nov. 30, 1868, for 6,000 0 0

And a further amount, for stocks of coals, coke, tar, and gas on hand, and gas-rental for public lamps, of 235 14 5

In pursuance of the covenants contained in the lease of Pater works, granted by the company to Mr. G. W. Stevenson, bearing date Oct. 1, 1867, the liquidators have sanctioned the expenditure of £1592 4s. 8d. for laying the main from Pater to Pembroke, and making the necessary extensions to the works at Pater, which sum carries interest at the rate of 5 per cent. per annum (this is in addition to the cost of the main purchased by the company previous to the liquidation). The Pembroke works having, under the same agreement, been closed, the liquidators opened

negotiations with the lessors, and ultimately were enabled to make arrangements for relieving the company from all liability under the leases of those works (two in number) for the sum of £80.

The lessor of the Lea Bridge works, Mr. Edwin Warner, claimed to have set aside the sum of £3800, and such further sum as might be requisite for the erection of the several buildings, and the formation of the road specified in certain covenants contained in the lease held from him by the company, but the liquidators have succeeded in inducing Mr. Warner to abandon such demand.

On the 4th of December, 1868, Mr. W. J. Erasmus Wilson, who had been placed upon the list of contributories in respect of 375 preference shares held by him, claimed that his name should be withdrawn from such list, and that he be taken as a creditor for £3750, and interest thereon, in lieu thereof. This claim the liquidators resisted, and Mr. Wilson took the opinion of the chief clerk upon the point.

After several adjournments, and hearing the various parties interested, the chief clerk determined that all the preference shares must rank as ordinary shareholders only, and not as creditors.

Early in the year 1868, numerous complaints having been made of the price and quality of the gas at Ely, the liquidators thought it desirable to reduce the price of it at that station from 6s. per 1000 cubic feet (which price was subject to a discount of 6d. per 1000 cubic feet for cash payment) to 5s. per 1000 cubic feet net from the 1st of July, 1868; and, notwithstanding this reduction, the rental has been £2245 1s. 3d. for the year ending Michaelmas, 1869, as against £2182 16s. 6d. for the previous year, and the reduction in price has given general satisfaction to the consumers.

In 1865 the company entered into a contract with Mr. John Bacon, of Ely, for the exchange of a piece of land then belonging to them for another piece, more conveniently situated, adjoining the works. By that contract they undertook, when required, to build a wall marking the boundary which separated their property from the other part of that belonging to Mr. Bacon. The liquidators found they were able to purchase Mr. Bacon's interest in the remainder of his property for the sum of £170; and finding that the cost of building the said wall would have exceeded £100, they had no hesitation in deciding to purchase the additional piece of land, the acquisition of which practically cost only at most £70.

On the 21st of October, 1868, the liquidators paid off Mr. Cuddon's mortgage and interest £8479 4s. 4d. They subsequently obtained the sanction of the court to pay the debenture-holders the amount of their debentures and interest, £5878 6s. 11d., and on the 24th of December, 1868, did so pay them the balance of the debentures and interest, £5533 19s. 8d. having been already paid off practically by accepting them as an equivalent to cash in part payment for the Walton works.

Since that date they have directed their attention to the payment of the remaining creditors of the company, contract debts to the amount of £7541 8s. 5d. having been taken as part payment of the Walton and Lea Bridge works, and in August last they were enabled to declare a first dividend of 10s. in the pound upon the balance of the claims admitted by the court—viz., £4488 6s. 4d. This absorbed the sum of £2244 3s. 2d.

The next point to which the liquidators desire to invite your attention is the trading account from the commencement of the liquidation to Michaelmas, 1869, during which period—viz., twenty-one months—a profit of £2909 17s. 8d., after making provision for the working expenses, has been earned.

Dr. TRADING ACCOUNT, *January* 1, 1868, *to Michaelmas*, 1869. *Cr.*

To Salaries	£475	0	0	By Services	£46	8	11
Rent	150	3	2	Rent	382	1	5
Rates and taxes	357	0	6	Interest on outlay at Pater	121	6	10
Coals	3,457	3	9	Coke	1,050	1	11
Lime	135	0	6	Sundry products	40	19	2
Wages	1,220	18	11	Tar	195	4	8
General expenses	393	1	7	Gas	7,620	10	1
Wear and tear	313	7	2	Meter-rent	201	3	6
Discount and allowances	112	10	2				
Insurance	19	5	0				
Travelling and gas collection expenses	103	1	11				
Bad debts	11	6	2				
Balance (being profit) carried to deficiency account	2,909	17	8				
	£9,657	16	6		£9,657	16	6

STATEMENT OF AFFAIRS, *Michaelmas*, 1869.

LIABILITIES.				ASSETS.			
Sundry creditors	£2,884	4	7	Value of works as shown by the books of the company	£33,670	2	8
Surplus for division amongst the shareholders, subject to realization and deductions for the costs of the liquidation	33,391	5	4	Stocks on hand	292	3	2
				Cash at Bank of England to the credit of liquidators	1,248	11	6
				Debts due to the company	1,064	12	7
	£36,275	9	11		£36,275	9	11

This surplus for division amongst the shareholders will depend on the three works now remaining unsold, producing the amount for which they stand in the books of the company, and will be subject to reduction to the extent of any loss that may be sustained in realization.

The expenses of liquidation up to March 1, 1869, are as follows:—

Solicitors costs	£943	18	0
Liquidators remuneration, viz.—			
Mr. H. P. Stephenson	152	7	6
Mr. W. J. White (including the charge for the duties of the provisional liquidators)	1,332	16	0

The liquidators have been in negotiation with numerous persons for the sale of the Northfleet and Ely works, but up to the present time have not succeeded in obtaining such an offer for either as they consider would be desirable to accept.

Dr. BALANCE-SHEET, *Michaelmas*, 1869. *Cr.*

To Capital—				By Works	£33,670	2	8
Ordinary	£29,135	0	0	Stocks on hand	292	3	2
Preference	10,000	0	0	Cash at Bank of England to the credit of liquidators	1,248	11	6
	£39,135	0	0	Debts due to the company	1,064	12	7
Sundry creditors	2,884	4	7	Balance (deficiency)	5,743	14	8
	£42,019	4	7		£42,019	4	7

DEFICIENCY ACCOUNT, *from January* 1, 1868, *to Michaelmas*, 1869.

To Deficiency, Dec. 31, 1867	£3,862	16	4	By Profit on trading	£2,909	17	8
Law charges	67	5	10	Deficiency	5,743	14	8
Interest	1,028	1	7				
Valuation of works	131	5	0				
Amount paid for cancelling lease at Pembroke	82	0	4				
Loss on realization below the book value of works—							
Lea Bridge £897 1 0							
Walton 681 3 3							
Ware 1,903 19 0							
	3,482	3	3				
	£8,653	12	4		£8,653	12	4

(Signed) H. P. STEPHENSON, W. J. WHITE, } Liquidators.

The CHAIRMAN invited any observations on the report which shareholders might be desirous to offer.

Mr. A. WILLIAMS said it was evident that those who had heard the report read could not possibly recall all the details with sufficient clearness to enable them to comment upon it. He suggested, therefore, that the report should be printed and circulated among the shareholders, and that another meeting be called after they had had time to consider the same.

The CHAIRMAN said as that was a meeting called by the liquidators solely to hear their report, it was not competent for the shareholders to pass a resolution which would have any binding effect, but he had no doubt the liquidators would give their assent to any suggestion which was offered, it being their desire to afford the fullest information as to the position of the company.

Mr. BLYTH said the meeting could pass no resolution containing a direction to the liquidators, but it was competent to the shareholders to pass a resolution expressive of their individual wishes.

Mr. WHITE said the liquidators anticipated that they would be asked to have the report printed, and they would have much pleasure in acceding to the request of the shareholders.

Mr. FIELD said it appeared to him that the statement laid before the meeting by the liquidators was highly gratifying. It seemed to him, however, a great pity that the company ever went into liquidation at all, for as far as he could gather it the shareholders would even now obtain a return of 15s. in the pound.

Mr. WHITE was afraid they were hardly justified in anticipating so much as 15s. in the pound. The liquidators had been careful to insert this qualification in their report—that their estimate was on the book value of the works, but it was not at all likely they would realize so much.

Mr. FIELD said at all events there would be a handsome return to be made.

Mr. MORRISON hoped the shareholders would take into consideration the desirability of forming a new company to purchase the works still unsold, which he believed might be carried on to advantage.

Mr. WHITE, in reply to an inquiry, said he did not think it would be in the interest of the company to state the sums which the liquidators had been offered for the remaining works, but he might say they were so ridiculously small that the offers could not be entertained for a moment. The liquidators were now in negotiation with several parties, and he had great faith that they would ultimately get a fair price.

Mr. LYSLEY quite agreed with Mr. Morrison that the shareholders would do well to get the works again into their own hands rather than dispose of them below the market value.

Mr. MORRISON reminded the meeting that the Pater works were now let on lease at an extremely low rental. In the course of a few years, when the lease fell in, they would be worth a considerably larger sum than they would now realize.

The CHAIRMAN said he was quite sure the liquidators would give their best attention to any feasible scheme of reconstruction which was submitted to them, and that the sanction of the court on their recommendation could be obtained for it.

Mr. WHITE said the desire of the liquidators would be to facilitate the carrying out of any scheme which the shareholders thought advantageous to the estate.

Mr. STEPHENSON said he did not think there would be any difficulty in the matter, although at the present meeting nothing could be done beyond that for which the shareholders were convened—viz., to hear from the liquidators an account of the proceedings taken by them. No scheme of reconstruction could be discussed on that occasion; but, having received the report, which was very full and minute in all its details, the shareholders could meet, and amongst themselves discuss the question apart from the liquidators. If they agreed upon a plan which appeared advantageous, the liquidators, on its being submitted to them, would either call a meeting in which the shareholders could legally express their approval of it, or they would submit it to the court and obtain authority to adopt it.

The CHAIRMAN said he felt that the liquidators was fully entitled to the thanks of the meeting for their admirable conduct of the company's affairs. It was a rare thing to hear that the whole of the mortgage and debenture debts of a company were practically cleared off within twelve months of the order for liquidation, and the general creditors received 10s. in the pound. In addition, they had learned that in the present case there was almost enough in hand to pay the remaining moiety of the debts.

Mr. STEPHENSON: Within £1000; and there are three works still in hand.

The CHAIRMAN called attention to the fact stated in the report, that the liquidators had postponed their own claim for remuneration, which was a prior one, in order that the general creditors of the company might receive a first instalment of 10s. in the pound.

After some further conversation, the following resolution, moved by Mr. MORRISON, and seconded by Mr. JOSEPH CLARKE, was put and carried unanimously:—"That the meeting thanks the liquidators for the report now laid before them, and requests that they will print the same and circulate it among the shareholders."

On the motion of Mr. STEPHENSON, seconded by Mr. WHITE, a vote of thanks was given to Mr. Craufurd for his kindness in presiding, and for his courteous conduct in the chair.

The CHAIRMAN acknowledged the vote, and said that he should be most happy to assist his brother shareholders in any plan for the reconstruction of the company.

DR. STEVENSON'S REPORT ON THE GAS SUPPLIED BY THE IMPERIAL COMPANY TO THE VESTRY OF ST. PANCRAS DURING THE MONTH OF OCTOBER, 1869:—

Date.	Number of Observations.	Average Light in Candles produced by 5 Ft. of Gas per Hour.	Light in Candles reduced to Consumption of 120 Grs. per Hour.	Traces of Ammonia.	Traces of Sulphuretted Hydrogen.
Oct. 2	10	13·1	14·4	Present.	None.
4	10	13·7	14·4	"	"
7	10	14·7	15·5	"	"
8	10	13·9	14·7	"	"
12	10	13·2	14·0	"	"
14	10	14·1	15·8	"	"
16	10	13·8	15·4	"	"
18	10	13·2	14·6	"	"
20	10	14·1	14·8	"	"
23	10	14·7	16·0	"	"
26	10	13·3	14·5	"	"
29	10	13·6	15·2	"	"

The maximum illuminating power was 16 standard candles on the 23rd; the lowest 14 candles, on the 12th of October; the average being 14·9 candles. The statutory illuminating power is 12 candles. Ammonia was invariably present, sulphuretted hydrogen always absent. The total amount of sulphur was 17·81 grains per 100 cubic feet; 20 grains per 100 cubic feet is allowed by the Gas Act, 1860.

THOS. STEVENSON.

MANCHESTER GAS SUPPLY.

The Gas Committee of the Manchester Corporation have presented the following report to the council:—

Your committee submit herewith an abstract of the accounts of this department for the year ending June 24 last, and also the usual tabular statements.

Appendix A shows the amount of lamp and private rental derived from the townships within and beyond the city respectively, for the past two years.

Appendix B, the quantity of gas transmitted from the works in the daytime, and during the whole 24 hours of the day, in each month, for the years 1867-68 and 1868-69.

Appendix C, the number of meters in use on the 24th of June, 1868 and 1869.

Appendix D, the main-pipes laid to the 24th of June, 1868, and those laid and taken up during the year ending the 24th of June, 1869.

Appendix E, the amount of the gross profit, and the mode of its appropriation; the amount of borrowed money owing, and the excess of assets in each year from 1860 to the 24th of June last.

Revenue.

The rental for the past year (including meter-rents) has amounted to the sum of £194,825 4s. 9d., being an increase of £12,106 15s. 3d. upon that of the previous year.

The gross amount of profit is £52,736 18s. 4d., as against £49,546 4s. 7d. in the previous year, and is appropriated as follows:—Payment of interest, £15,467 12s. 6d.; transferred to capital account towards liquidation of the mortgage debt, £22,688 14s. 4d.; and the surplus to be paid over for improvement purposes, £14,580 11s. 6d., as against £14,985 6s 5d. the previous year.

In addition to £14,580 11s. 6d., the amount of the surplus profit, the further sum of £11,303 19s. 8d., in anticipation of future profits, will be paid over for improvement purposes, in accordance with the arrangement sanctioned by the council on the 4th day of March, 1868, making together the sum of £25,884 11s. 2d.

The number of consumers has increased 4·33 per cent., amounting now to 53,444 as against 51,225 the previous year; and the quantity of gas consumed has exceeded that of the previous year by 88,583,000 feet, or 7·1 per cent.

Your committee also submit the reports of Mr. John Leigh, the consulting and analytical chemist to this department, and Messrs. S. E. Cottam and Son, the accountants appointed by the council to audit the accounts for the past year:—

"*To the Chairman of the Manchester Gas Committee.*

"Sir,—I have the honour to report to you that the average illuminating power of the Manchester gas during the past year has been equal to 21·11 sperm candles, burning at the rate of 120 grains per hour, the consumption of the gas having been reduced to a constant standard of 5 cubic feet per hour. The observations have been made almost daily at the Gaythorn gas station, Hulme, and at the Rochdale Road station.

"The illuminating power of the gas has been higher during the last year than during the preceding two years, in the ratio of 21·11 to 20·87 and 20·58 candles.

"The gas has been tested daily for sulphuretted hydrogen, and has also been led continuously through test solutions, in order that the exact amount of this impurity might be determined if present. It has scarcely ever been found in appreciable quantity during the year.

"The ammonia in the gas has also been continuously tested by conducting the gas through solutions capable of absorbing it and furnishing means to estimate its amount. That amount has never exceeded a few grains in 100 feet of gas.

"The gas has been very free from naphthaline and from tarry matter. It has occasionally contained a little oily matter from the use of Welsh cannel.

"I have, &c., "JOHN LEIGH, M.R.C.S., &c.

"*York Chambers, King Street, Manchester, Sept.* 21, 1869."

"2, *Essex Street, King Street, Manchester, Sept.* 20, 1869.

"Gentlemen,—We beg to report the completion of our duties as auditors appointed for the year ended June 24 last.

"We have carefully gone through all the books, from the collectors statements of receipts and the committee's authorities for payments, passing through the banking books, cash-book, journal, invoice and voucher books, to the ledgers both personal and impersonal; and have collated therefrom the particulars comprised in the various annual statements of profit and loss, receipts and payments, assets and liabilities, capital and revenue accounts. The bonds repaid during the year have been exhibited to us, and the list of existing bonds compared with the register, and we have pleasure in certifying to their correctness.—We are, &c.,

"SAMUEL E. COTTAM AND SON.

"The Gas Committee, Manchester Corporation."

Capital Account.

The expenditure on capital account during the past year has amounted to the sum of £53,577 11s. 7d., particulars of which are given in the statement of assets and liabilities.

The whole of the new works at the Gaythorn and Rochdale Road stations are progressing satisfactorily, and your committee expect they will be completed by the winter season of 1870-71.

Proposed New Station near Bradford Road.

Your committee are of opinion that the time has now arrived for taking immediate steps for the formation of additional works.

The consumption of gas in the year ending 1844 was 248 million cubic feet; in 1849 it had risen to 354 million; in 1859 to 698 million; and in 1869 to 1335 million. Thus it will be seen that, during the last ten years, the consumption has, as nearly as may be, doubled; during the last twenty years it has increased fourfold; and during the last twenty-five years nearly sixfold.

The progressive annual increase is found to average about 7·1 per cent., or 1-14th each year. This rate, which has been preserved with tolerable steadiness throughout the last twenty-five years, is still maintained. It also corresponds very closely with what is found to be the case in Liverpool and other large towns.

Having regard to the opening up of new districts by the extension of the mains, the rapid growth of mechanical works, and the wide and liberal use of gas in residential property, it is not unreasonable to expect that the rate of increase heretofore experienced will continue to prevail for years to come. Assuming that this expectation will be realized, the consumption of gas in 1879 will be double what it now is, and in 1885, sixteen years hence, it will have increased threefold.

For some years past the works have been scarcely equal to the growing consumption; in fact, in every winter season more gas could have been sold had there been the capacity of works to manufacture and store it. This was particularly the case last winter. The extensions now in progress at the Gaythorn and Rochdale Road stations, when completed, will be final. Each station will then be complete and symmetrical as regards the capacity for manufacture and purification, without any land being available in their respective localities for further extension.

The manufacturing and purifying power of the existing works will, when completed, be equal to about 11 million cubic feet per 24 hours, and the storeage capacity to about 7 million cubic feet. The consumption in 24 hours during the last winter frequently amounted to upwards of 7 million cubic feet, and there is reason to believe that it would have reached to upwards of 8 millions if that quantity could have been supplied.

According to the law of increase thus indicated, it is reasonable to suppose that, in the winter season of 1874-75, the productive power of the present works will be taxed to the utmost limit.

Your committee take it for granted that the council would scarcely approve of the establishment of a competing supply of gas within the district occupied by the mains of the corporation (which now embraces an area of 42 square miles or thereabouts), and that the council therefore assumes not only the privilege but also the responsibility of providing an adequate supply for such district by the extension of the works from time to time when found necessary.

Impressed by a consideration of these facts, which were alluded to by the late chairman upon the occasion of the visit of the members of the council to the works in October, 1866, and seeing that the erection of new works will, under the most favourable circumstances, occupy at least four years from the period of obtaining possession of the land, your committee had no hesitation in arriving at the conclusion that it was of the utmost importance that a suitable site should be at once secured, whereon the proposed additional works could be erected, and by such instalments as the increasing demand for gas might point out to be prudent and necessary.

The rapid rise in the value of land in the neighbourhood of Manchester, the increasing difficulty of securing large plots, and the importance of having the opportunity of choice as regards locality, suitable elevation for convenience of distribution, and contiguity to roads, railways, and canals for the receipt of cannel, lime, and other materials, as also for the delivery of residual products, also indicated to your committee that the earliest possible selection of a site would be true economy.

Your committee, therefore, on the 15th of January last, appointed a sub-committee, consisting of the chairman, deputy-chairman, Mr. Alderman Rumney, and Mr. Councillor Hopkinson, with power and instructions to select and purchase a suitable plot of land on which to erect the proposed additional works.

On the 2nd of July last the sub-committee reported as follows:—

(COPY.)

"The undersigned, who were instructed by the Gas Committee, on the 15th of January last, to select and negotiate the purchase of a suitable plot of land to form the site of another station for the manufacture and storeage of gas, report that, in accordance with such instructions, they upon several occasions visited and considered the adaptability of the following plots:—

"1. The plot of land adjoining Mr. Alderman Bennett's yard near Hyde Road, Ardwick, and situate between the London and North-Western, and the Manchester, Sheffield, and Lincolnshire Railways, near their junction, formerly belonging to Mr. Burgess, but now the property of Mr. Bennett.

"2. A plot of land situate between the Ashton Old and New Roads, in the township of Ardwick, adjoining the Lancashire and Yorkshire Company's branch railway from Ardwick Junction to Miles Platting. This plot belongs partly to Mr. H. A. Bennett and partly to Sir Oswald Mosley, Bart.

"3. A plot of land situate on the easterly side of the branch railway in the township of Beswick, the property of

"4. A plot of land situate on the northerly side of the Lancashire and Yorkshire Company's main line in the township of Newton Heath, the property of the Dean and Canons.

"5. A plot of land situate at Newton Heath, within the triangle formed by the junction of the Lancashire and Yorkshire Company's branch line and the line leading to Ashton, the property of the Dean and Canons.

"6. The plot of land adjoining the Droylsden Gas-Works, in the township of Droylsden.

"7. Two plots of land, adjoining each other, belonging to Sir Oswald Mosley, situate near Bradford Road, in the township of Manchester, one of which is bounded on the north by the centre of a street 14 yards wide; on the south-easterly side partly by the centre of the river Medlock, and partly by lands belonging to Townley Parker, Esq., and the representatives of the late Mr. Thomas Porter; and on the westerly side by the Lancashire and Yorkshire Company's branch line. This plot contains 98,000 square yards or thereabouts. The other plot is bounded on the southerly side by the Ashton Canal; on the north-westerly side by other land belonging to Sir O. Mosley; and on the easterly side by the centre of an intended street 10 yards wide. This plot contains 10,000 square yards or thereabouts.

"In addition to the plots enumerated, the undersigned considered the question of the expediency of erecting the proposed new works at some distance from the city, in the neighbourhood of Patricroft or Little Hulton for instance, where probably land might be obtained at a cheap rate, and a saving in the carriage of coal and cannel would be effected by the proximity of the works to the colliery districts; but as for that purpose the sanction of Parliament would have to be obtained, and as the cost of the requisite trunk mains would be very great, the undersigned have not thought it desirable to recommend such plan.

"Having obtained all the information possible with regard to the several plots under consideration, the undersigned were unanimous in their conclusion that, for the purpose intended, the most eligible in every respect were the two plots (No. 7), which they have therefore secured through the medium of Mr. Councillor Hopkinson—the first of such plots containing 98,000 square yards, at 3d. per yard and 20 years purchase, or £24,500; and the second containing 10,000 square yards or thereabouts, at 6d. per yard and 20 years purchase, or £5000; making a total of £29,500 for 108,000 square yards, or an average of 3¼d. per square yard and 20 years purchase.

"In arriving at the conclusion now reported, the undersigned were influenced by a consideration of the important advantages that will be afforded by proximity to the Lancashire and Yorkshire Company's branch line, by which direct communication may be obtained by railway on the high level, and by canal, also on a high level, with the coal-fields of Wigan, Dukinfield, North Wales, the Silkstone district, and South Yorkshire; besides which the roads into and out of the yard will be convenient and commodious for the reception of mains, and will prove satisfactory as regards the traffic in connexion with the station.

"The agreements for purchase were prepared with the approval of Mr. Talbot, and are now submitted, together with the receipt for the deposit of £500 which was paid by Mr. Councillor Hopkinson. It will therefore be necessary that the committee should authorize the repayment of such sum to Mr. Hopkinson, together with the amount of the bankers commission and interest up to the date of repayment.

"The committee will be better able to appreciate the purchase now reported, by a comparison of the areas and cost of the sites of the two existing stations with those of the intended new station.

"The site of the Gaythorn station contains 37,257 square yards, and has cost 1s. 6d. per yard and 20 years purchase.

"The site of the Rochdale Road station contains 38,973 square yards, and has cost 7d. per yard and 20 years purchase.

"The site of the proposed new station will, as already stated, contain 108,000 square yards or thereabouts, and will cost 3¼d. per yard and 20 years purchase.

"On this area a work of symmetrical arrangement can be developed by gradual extension, capable of producing gas to the amount of double the other existing stations taken together, and thus providing for the growing wants of the city for some years.

"A thick bed of brick clay exists on the land, affording not only the means of obtaining bricks for buildings and tanks at a cheap rate, but also admitting of the letting of a portion of the land until actually wanted, and thus diminishing the amount of interest on unproductive capital.

"THOS. D. CREWDSON,
JOHN KING, jun.,
R. RUMNEY,
J. HOPKINSON."

On the reception of this report your committee resolved as follows:—

"That the proceedings of the special sub-committee now reported be and they are hereby approved of and adopted, and that the town-clerk be instructed to take the necessary steps for completing the purchase of the land referred to.

"That the same sub-committee be reappointed, with instructions to make the necessary arrangements for the rectification of the boundary of the land on the side adjoining the river, either by the sale, purchase, or exchange of land with Townley Parker, Esq., Mr. Porter's representative, the Ashton Canal Company, and the Lancashire and Yorkshire Railway Company; also to take steps for the proper conservancy of the land, and to submit as early as convenient a block plan showing in what way the land can be most advantageously laid out for the purposes for which it has been purchased."

In selecting the site purchased, full consideration was given to the circumstance of its proximity to the park and cemetery; but it appears to your committee that the erection of the proposed works will be less objectionable or detrimental to the neighbouring properties than if the land becomes occupied by iron, cotton, or other manufacturing works, or by cottage property.

In considering this part of the question, your committee would direct the attention of the council to the fact that fully one-half of the site will be occupied by the gasholders; and that the natural formation of the land, with its frontages to the railway and canal, will necessitate the erection of the retort-houses and other buildings—from which alone any smoke or nuisance can arise—on the portion which is most remote from the park and cemetery.

Your committee have now, in compliance with the expressed wish of the council, submitted the reasons which induced them to purchase the plot of land in question, a consideration of which your committee venture to hope will satisfy the council that a wise discretion has been exercised, and that the proposed new works can be erected and carried on without injury to the adjoining properties, and, at the same time, to the ultimate pecuniary advantage of the corporation.

On behalf of the Gas Committee,

THOS. D. CREWDSON, Chairman.

Gas Offices, Albert Chambers, Albert Square, Sept. 24, 1869.

Dr. *Profit and Loss Account, for the Year ending June 24, 1869.* *Cr.*

To Cannel				£95,932	7	3
Retort men's wages				17,485	2	2
Retorts, materials, and setting				4,650	9	11
Purifying charges				4,126	11	5
Labourers wages, and repairs, &c., of works—						
Gaythorn station	£3,951	18	9			
Rochdale Road station	3,446	4	3			
Street-mains	3,549	15	1			
				10,947	18	1
Salaries—						
Thomas Peacock, in-door superintendent	£600	0	0			
John R. Macfarlane, manager, Gaythorn station	600	0	0			
Henry Lyon, manager, Rochdale Road station	500	0	0			
John Leigh, consulting chemist	250	0	0			
Thomas Rafferty, surveyor of street-mains	315	0	0			
Jonas Croft, chief clerk	300	0	0			
John Bardsley, chief meter inspector	300	0	0			
Chas. Headen, draughtsman, street-mains	131	0	0			
Thomas Gillibrand, clerk, and collector of miscellaneous accounts	110	0	0			
Thomas C. Lever, inspector of fittings	96	0	0			
Charles Dobbs, inspector of fittings	96	0	0			
William Ayrton, clerk in rental office	87	15	0			
Theodore Carr, clerk in rental office	78	2	6			
J. Whittingham, clerk in rental office	78	2	6			
James Lee, clerk in rental office, (portion of year)	72	10	0			
City surveyor (portion of salary)	100	0	0			
City treasurer (ditto)	100	0	0			
Wages of meter inspectors and assistants in rental and inquiry offices, at 32s. per week and under	3,671	9	7			
				7,485	19	7
Collectors poundage, &c.—						
John Ashcroft	£286	19	11			
John T. Banks	248	9	6			
Charles Nickson	253	3	1			
James Whittaker	215	13	10			
William A. Nield	196	15	8			
Oswald Turner	176	2	2			
William Stubbs	162	13	4			
Thomas E. Harley	166	11	6			
Samuel Robinson	155	4	5			
Jabez Ashworth	156	16	7			
Charles Westoby	156	13	4			
James Warrington	155	16	1			
Richard G. Walker	156	6	1			
George F. Bateman	143	17	2			
William Richardson	133	17	11			
William C. Hodson (portion of year)	79	0	0			
William Fearnhead (ditto)	35	0	0			
J. Hall, poundage on broken period rentals	19	0	7			
Arthur Leason, ditto	17	18	9			
James Shaw, receiver of rentals paid in the office	280	0	0			
John Ogden, assistant ditto	120	0	0			
Collection of arrears—						
Thomas Gillibrand	22	10	0			
				3,338	9	11
Chief and other rents and rates, &c.—						
Chief rents	£282	3	4			
Rates and rent of offices	731	14	10			
Rates on stations and street-mains	4,492	2	2			
				5,506	0	4
Income-tax				1,271	6	0
Amount transferred to capital for depreciation of works—						
Gaythorn station—						
4 p. ct. on buildings (£74,648 18s. 5d.)	£2,985	19	3			
5 per cent. on apparatus (£30,561 19s. 6d.)	1,528	1	11			
	£4,514	1	2			
Rochdale Road station—						
4 p. ct. on buildings (£59,675 6s. 2d.)	£2,387	0	2			
5 per cent. on apparatus (£35,701 0s. 11d.)	1,785	1	0			
	4,172	1	2			
Street-mains store (Poland Street)—						
4 p. ct. on buildings (£1945 11s.)	£77	16	5			
5 per cent. on apparatus (£521 16s. 3d.)	26	1	9			
	103	18	2			
Street-mains—						
2½ per cent. on main-pipes (£203,089 12s. 7d.)	5,077	4	9			
Hired meters and fittings—						
10 per cent. on £15,072 4s. 6d.	1,507	4	5			
Meter-proving apparatus—						
10 per cent. on £132 19s. 7d.	13	5	11			
				15,387	15	7
Stationery and advertising				582	7	5
Law stationery, receipt, postage, and deed stamps, &c.				272	19	2
Clothing for inspectors, &c.				179	0	9
Subscriptions to Infirmary, Eye Hospital, &c.				80	11	6
Repairs of hired meters				57	2	3
Miscellaneous expenses				384	1	6
Commission, &c., charged by bankers				353	0	0
Bad debts and allowances				1,011	4	8
Balance carried down				52,736	18	4
				£221,789	5	10

By Gas-rentals—						
Within the city—						
Private consumers	£146,463	4	8			
Meter-rents	2,001	12	4			
Public lamps	9,109	0	7			
				£157,573	17	7
Beyond the city—						
Private consumers	£34,082	0	5			
Meter-rents	439	4	3			
Public lamps	2,725	2	6			
				37,246	7	2
				£194,825	4	9
Coke, tar, and ammonia water				26,964	1	1
				£221,789	5	10

To Interest on loans, &c. (less income-tax)				£15,467	12	6
Amount transferred to capital account, towards liquidation of mortgage debt				22,688	14	4
Surplus payable to the improvement department				14,580	11	6
				£52,736	18	4

By Balance brought down, being gross profit on the year's working				£52,736	18	4
				£52,736	18	4

Dr. *General Summary of Receipts and Expenditure on Capital and Revenue Account, June 24, 1869.* *Cr.*

To Balance in the bank, June 24, 1868			£14,491	3	6	By Loans repaid		£72,435 7 4
Ditto in the treasurer's hands, June 24, 1868			15	9	5	Improvement and Chorlton-upon-Medlock Committees—		
Ditto of sums owing to and by the committee, including stocks on hand, June 24, 1868			45,980	10	2	Surplus for year ending June 24, 1868	£14,985 6 5	
					£60,487 3 1	Advanced in anticipation of future profits	13,059 8 5	
Balance of profit and loss account, June 24, 1869, as per statement					14,580 11 6			28,044 14 10
Loans received					116,869 5 5	Expenditure on capital account—		
Materials, &c., sold (capital account) as per statement—						Gaythorn station	£9,415 9 3	
Gaythorn station	£1,165	7 10				Rochdale Road ditto	29,611 7 7	
Rochdale Road station	897	9 3				Street-mains	8,993 17 6	
					2,062 17 1	Service-pipes (one moiety)	1,000 3 10	
Amount transferred from revenue account—						Hired meters	4,556 13 5	
For depreciation of works					15,387 15 7			53,577 11 7
For liquidation of mortgage debt					22,688 14 4	Balance in the bank, June 24, 1869	£29,240 4 1	
						Ditto in treasurer's hands, June 24, 1869	59 6 10	
					£232,076 7 0			29,299 10 11
						Ditto of sums owing to and by the committee, including stocks on hand, June 24, 1869		48,719 2 4
								£232,076 7 0

Statement of Assets and Liabilities, June 24, 1869.

PERMANENT ASSETS.

Lower King Street station—					
Land (now let to Watch Committee, at an annual rent of £300)					£7,500 0 0
Gaythorn station—					
Land, buildings, and apparatus, as per last report—					
Land	£55,435	6 10			
Buildings	80,079	14 4			
Apparatus	35,346	7 9			
			£170,861	8 11	
Less—					
Materials sold, &c.	£1,165	7 10			
Depreciation	4,514	1 2			
			5,679	9 0	
			£165,181	19 11	
One year's outlay to June 24, 1869—					
Yard-mains			31	3 2	
New purifying-house			5,121	6 3	
New engine and exhauster house			1,829	19 9	
New workshops			96	2 8	
New cannel-stores, retort-house, &c.			412	7 5	
New offices and boundary walls			74	2 4	
New experimental apparatus			37	5 3	
New weighing machine			11	4 0	
No. 6 tank			1,379	6 9	
No. 6 holder			22	8 6	
Street mains store			153	17 8	
Well boring			246	5 6	
Rochdale Road station—					174,597 9 2
Land, buildings, and apparatus, as per last report—					
Land	£25,060	0 1			
Buildings	70,236	12 3			
Apparatus	36,210	9 0			
			£131,507	1 4	
Less—					
Materials sold, &c.	£897	9 3			
Depreciation	4,172	1 2			
			5,069	10 5	
			£126,437	10 11	
One year's outlay to June 24, 1869—					
Land			£1,736	3 0	
Yard-mains			161	17 6	
New purifying-house			7,789	13 4	
New workshops			665	11 3	
New cannel-store			1,111	17 4	
New cannel-stores, adjoining Dewhurst Street			6,296	12 7	
New retort-house and cannel shed			5,510	2 11	
New retort-house, adjoining cannel-shed			454	16 5	
New offices			2,471	14 11	
New railway machine office			371	5 8	
New experimental apparatus			4	12 10	
Rochdale Road entrance			64	18 8	
Tebbutt street ditto			157	4 7	
Coke-hoist			82	16 1	
Lime-shed, &c.			126	15 1	
New gasholder-tanks, Newtown			1,205	5 5	
River wall, Newtown			1,400	0 0	
					156,048 18 6
Street-mains store (Poland Street)—					
Land, buildings, and apparatus, as per last report—					
Land	£1,406	0 0			
Buildings	1,945	11 0			
Apparatus	521	16 3			
			£3,873	7 3	
Less—					
Depreciation			103	18 2	
					3,769 9 1
Street-mains—					
Main-pipes, as last report	£203,089	12 7			
Less—depreciation	5,077	4 9			
			£198,012	7 10	
One year's outlay to June 24, 1869			8,993	17 6	
					207,006 5 4
Service-pipes—					
Service-pipes laid, as per last report			£14,932	15 0	
Moiety of year's outlay charged to capital account			1,000	3 10	
					15,932 18 10
Hired meters, &c.—					
Outlay, as per last report	£15,072	4 6			
Less—depreciation	1,507	4 5			
			£13,565	0 1	
One year's outlay to June 24, 1869			4,556	13 5	
					18,121 13 6
Meter-proving apparatus—					
Outlay, as per last report			£132	19 7	
Less—depreciation			13	5 11	
					119 13 8
Total amount of permanent assets					£583,096 8 1

FLOATING ASSETS.

Cannel, retorts, and other materials on hand—					
Revenue account			£31,988	4 4	
Gas-rents, and sundry accounts due to the committee—					
Revenue account			40,225	0 0	
Extension account			1,188	19 6	
Amount paid in advance to the improvement depart., in anticipation of future profits			13,059	8 5	
Balance in the bank			29,240	4 1	
Ditto in the treasurer's hands			59	6 10	
					115,761 3 2
					£698,857 11 3
Excess of assets, June 24, 1869					£262,374 9 10
Excess of assets, June 24, 1868					239,685 15 6
Increase, being the amount charged upon the profit for the past year towards liquidation of the mortgage debt, and carried to capital account					£22,688 14 4

LIABILITIES.

Mortgage debt—					
Act of 1844—1st charge	£85,721	0 9			
Ditto—2nd ditto	28,931	5 0			
Ditto of 1854	43,760	0 0			
Ditto of 1858	119,460	2 4			
Ditto of 1867	81,127	0 4			
Total amount secured by mortgage			£358,999	8 5	
Sums advanced, not secured by mortgage at this date—					
Highways Committee	£8,000	0 0			
Indian Relief-Fund Committee	5,500	0 0			
Admiral Duff's Charity	1,250	0 0			
Thomas Hill	1,500	0 0			
Sundry persons	20,220	0 0			
			36,470	0 0	
					£395,469 8 5
Purchase of land, the purchase-money being left in the hands of the corporation at interest					1,750 0 0
Sundry accounts owing—					
Revenue account			£13,143	0 1	
Extension account			5,357	2 10	
					18,500 2 11
Deposits in hand					6,182 18 7
					£421,902 9 11
Surplus for the year ending June 24, 1869, payable to the improvement department					14,580 11 6
Balance, being excess of assets					262,374 9 10
					£698,857 11 3

[APPENDIX A.]

Statement of the Lamp and Private Rental (including Meter-Rents) derived from the Townships within and beyond the City respectively, for the Years 1867-8 and 1868-9.

	Half Year ending Dec. 25, 1867.			Half Year ending June 24, 1868.			Total for the Year 1867-8.			Half Year ending Dec. 25, 1868.			Half Year ending June 24, 1869.			Total for the Year 1868-9.		
Within the city.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
Township of Manchester—																		
Private rental	42211	8	2	43597	10	11				44101	7	2	45820	14	7			
Public lamps	2658	19	8	2404	13	9				2646	6	0	2413	3	3			
	44870	7	10	46002	4	8	90872	12	6	46747	13	2	48233	17	10			
Other townships—																		
Private rental	26444	5	0	27642	14	10				28508	4	9	30039	10	6			
Public lamps	1956	11	8	1973	16	8				2003	9	8	2046	1	8			
	28400	16	8	2916	11	6	58017	8	2	30511	14	5	32085	12	2			
Total within the city	73271	4	6	75618	16	2	148890	0	8	77259	7	7	80319	10	0	157578	17	7
Beyond the city.																		
Private rental	14515	16	7	16738	2	3				16431	1	2	18090	3	6			
Public lamps	1261	13	8	1312	16	4				1337	11	0	1387	11	6			
Total beyond the city	15777	10	3	18050	18	7	33828	8	10	17768	12	2	19477	15	0	37246	7	2
Gross rental	89048	14	9	93669	14	9	182718	9	6	95027	19	9	99797	5	0	194825	4	9

Within the city: Gross rental (1867-8) £148,890 0s. 8d.; ditto (1868-9) £157,578 17s. 7d.; increase, £8688 16s. 11d. Beyond the city: Gross rental (1867-8) £33,828 8s. 10d.; ditto (1868-9) £37,246 7s. 2d.; increase, £3417 18s. 4d. Total: Gross rental (1867-8) £182,718 9s. 6d.; ditto (1868-9) £194,825 4s. 9d.; increase, £12,106 15s. 3d.

[APPENDIX B.]

Comparative Statement of the Quantity of Gas transmitted from the Works, in the Day-time and during the Twenty-four Hours, for the Years 1867-8 and 1868-9.

	Day-time.			Twenty-four Hours.		
	1867-68.	1868-69.	Inc. or Dec.	1867-68.	1868-69.	Inc. or Dec.
			Per cent.			Per cent.
July	11,153,000	9,638,000	13·58 Dec.	50,092,000	48,268,000	3·64 Dec.
August	10,582,000	10,605,000	·21 Inc.	60,210,000	61,287,000	1·78 Inc.
September	12,489,000	12,408,000	·64 Dec.	76,824,000	83,032,000	8·08 ,,
October	18,344,000	26,098,000	42·26 Inc.	119,347,000	137,435,000	15·15 ,,
November	27,876,000	25,157,000	9·75 Dec.	152,609,000	169,901,000	11·33 ,,
December	34,633,000	31,742,000	8·35 ,,	183,411,000	190,622,000	3·93 ,,
January	31,309,000	29,972,000	4·27 ,,	177,004,000	181,583,000	2·57 ,,
February	20,087,000	21,230,000	5·69 Inc.	134,538,000	140,254,000	4·25 ,,
March	17,626,000	20,157,000	14·35 ,,	112,593,000	119,482,000	6·11 ,,
April	14,207,000	15,176,000	6·82 ,,	77,588,000	84,173,000	8·48 ,,
May	10,819,000	13,303,000	22·95 ,,	58,226,000	66,664,000	14·49 ,,
June	9,866,000	12,570,000	27·40 ,,	44,450,000	52,774,000	18·72 ,,
Total	218,991,000	228,056,000	4·13 Inc.	1,246,892,000	1,335,475,000	7·10 Inc.

During the day-time (1867-8) 218,991,000 cubic feet; (1868-9) 228,056,000 cubic feet; increase, 9,065,000 cubic feet. During the twenty-four hours (1867-8) 1,246,892,000 cubic feet; (1868-9) 1,335,475,000 cubic feet; increase, 88,583,000 cubic feet.

[APPENDIX C.]

Table showing the Number of each Size of Meter in use on the 24th of June, 1868 and 1869 respectively, including those on Hire.

Size of Meters.	Townships within the City.														Townships beyond the City.		Total.		Increase.	Decrease.
	Manchester.		Chorlton-upon-Medlock.		Hulme.		Ardwick.		Beswick.		Cheetham.		Total within the City.							
	1868.	1869.	1868.	1869.	1868.	1869.	1868.	1869.	1868.	1869.	1868.	1869.	1868.	1869.	1868.	1869.	1868.	1869.		
1 light	100	98	35	34	43	41	21	19	1	..	5	5	205	197	7	7	212	204	..	8
2 lights	9866	10052	3112	3252	5999	6170	1917	2003	198	228	1479	1485	22571	23190	5659	6272	28230	29462	1232	..
3 ,,	4349	4294	1936	1971	2034	2060	602	578	14	22	929	972	9864	9897	2085	2243	11949	12140	191	..
5 ,,	2427	2488	1110	1135	518	551	236	247	6	13	515	575	4812	5009	1324	1532	6136	6541	405	..
10 ,,	1310	1334	311	341	138	150	67	82	2	4	132	154	1966	2065	546	609	2512	2674	162	..
20 ,,	675	725	84	96	40	50	33	27	1	1	35	40	870	939	187	227	1057	1166	109	..
30 ,,	267	306	25	29	17	20	9	14	2	3	19	20	339	382	65	84	404	476	72	..
45 ,,	53	49	4	4	3	3	3	3	..	..	..	..	63	59	8	8	71	67	..	4
50 ,,	132	151	10	13	8	9	5	6	2	2	6	8	163	189	36	42	190	231	32	..
60 ,,	80	82	2	3	12	13	2	2	..	..	3	3	99	103	11	12	110	115	5	..
80 ,,	63	66	7	7	4	5	5	1	..	..	..	..	79	79	8	9	87	88	1	..
100 ,,	100	112	8	9	9	7	2	6	1	1	6	6	126	141	22	24	148	165	17	..
150 ,,	32	37	5	5	5	5	2	2	..	..	..	1	44	50	14	11	58	61	3	..
200 ,,	11	12	..	..	2	3	..	..	..	..	3	3	16	18	5	6	21	24	3	..
250 ,,	1	1	..	..	..	..	..	..	1	1	..	..	2	2	..	..	2	2	..	..
300 ,,	16	15	1	1	1	1	..	..	..	..	3	3	21	20	7	7	28	27	..	1
500 ,,	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	1	..	..
Total	19482	19822	6650	6900	8833	9088	2904	2990	228	275	3135	3275	41240	42350	9985	11094	51225	53444	2232	13
																	Deduct decrease		13	
																	Net increase = 4·33 per cent.		2219	

Statement showing the Number and Sizes of Meters on Hire on June 24, 1869 (included in the above Table).

	1 Light.	2 Lights.	3 Lights.	5 Lights.	10 Lights.	20 Lights.	30 Lights.	50 Lights.	60 Lights.	80 Lights.	100 Lights.	150 Lights.	Total, 1869.	Total, 1868.	Increase.
Within the city	197	7336	1761	684	147	34	7	2	2	1	1	1	10173	8786	1387
Beyond the city	7	1604	491	232	35	3	1	..	1	..	..	..	2374	1653	721
Total	204	8940	2552	916	182	37	8	2	3	1	1	1	12547	10439	2108

[APPENDIX D.]

Pipes Laid and Taken up during the Year ending June 24, 1869.

Laid.	Diam. 2 in.	Diam. 3 in.	Diam. 4 in.	Diam. 6 in.	Diam. 8 in.	Diam. 12 in.	Diam. 16 in.	Diam. 18 in.	Total Length.
Within the city—	Yds.	Yds	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.
Manchester	4409	1474	2074	204	..	..	346	961	9468
Chorlton-upon-Medlock	1729	285	..	..	31	..	..	..	2045
Hulme	2097	718	..	116	..	..	..	..	2931
Cheetham	1164	1322	33	358	..	2203	..	..	5080
Ardwick and Beswick	1082	..	..	..	..	..	..	..	1082
	10481	3799	2107	678	31	2203	346	961	20606
Beyond the city	9270	4819	3737	1224	..	624	..	..	19674
Total	19751	8618	5844	1902	31	2827	346	961	40280
Taken up.									
Within the city	898	2436	236	..	..	..	..	..	3070
Beyond the city	865	291	37	..	..	..	..	..	1193
Total	1763	2727	273	..	..	..	..	..	4263

Net increase during the year, 36,017 yards.

[APPENDIX D—*continued.*]

Summary.

Pipes laid up to June 24, 1868—	Diam. 2 in.	Diam. 3 in.	Diam. 4 in.	Diam. 5 in.	Diam. 6 in.	Diam. 7 in.	Diam. 8 in.	Diam. 9 in.	Diam. 10 in.	Diam. 11 in.	Diam. 12 in.	Diam. 13 in.	Diam. 14 in.	Diam. 15 in.	Diam. 16 in.	Diam. 18 in.	Diam. 20 in.	Diam. 22 in.	Diam. 24 in.	Diam. 30 in.	Total Length
	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.
Within the city . . .	164068	112506	41929	15543	26500	756	13682	13603	1241	353	24211	309	7191	5672	2404	3601	388	477	6433	2513	443380
Beyond the city . . .	69942	38412	35186	6317	19505	410	20956	10745	604	1808	16823	..	737	37	..	682	..	..	315	..	222479
Pipes laid during the year ending June 24, 1869—	234010	150918	77115	21860	46005	1166	34638	24348	1845	2161	41034	309	7928	5709	2404	4283	388	477	6748	2513	665859
Within the city . . .	10481	3799	2107	..	678	..	31	..	..	..	2203	..	..	..	346	961	..	..	..	..	20606
Beyond the city . . .	9270	4819	3737	..	1224	..	..	..	..	..	624	..	..	..	..	..	..	..	..	..	19674
	253761	159536	82959	21860	47907	1166	34669	24348	1845	2161	43861	309	7928	5709	2750	5244	388	477	6748	2513	706139
Deduct taken up . .	1263	2727	273	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4263
Total	252498	156809	82686	21860	47907	1166	34669	24348	1845	2161	43861	309	7928	5709	2750	5244	388	477	6748	2513	701876*

* Total, 701,876 yards, or 398¾ miles and 76 yards.

[APPENDIX E.]

Statement showing the Amount of Gross Profit, and the Mode of its Appropriation; also the Amount of Borrowed Money Owing, and the Excess of Assets, &c., from the Year 1860 to the present Date.

Year ending June 24.	Gross Profit.	Maximum Price of Gas, per 1000 Feet, within the City.	Appropriation of Gross Profit.			Appropriation of Surplus.		Borrowed Money Owing.	Amount charged to Revenue in respect of Depreciation of Works and Mains.	Excess of Assets.
			Interest.	Liquidation of Mortgage Debt.	Surplus.	Improvement Purposes.	Water-Works Committee.			
	£ s. d.	s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1860. .	64779 14 10	Half year . . 5 0 " . . 4 6	16255 12 4	13306 5 6	35217 17 0	17608 18 6	17608 18 6	366175 8 4	5000 0 0	88280 7 2
1861. .	51725 0 1	Half year . . 4 6 " . . 4 0	16098 5 3	18980 3 0	16746 11 10	8373 5 11	8373 5 11	379603 0 8	11372 5 0	107260 10 2
1862. .	42667 7 1	. . . . . 4 0	15482 3 2	19330 14 4	7854 9 7	7854 9 7	....	382539 7 10	12179 4 11	120591 4 6
1863. .	55804 12 9	Half year . . 4 0 " . . 3 9	14932 17 8	18609 17 4	22261 17 9	22261 17 9	....	362877 8 10	12666 18 11	145201 1 10
1864. .	50545 18 9	Half year . . 3 9 " . . 3 6	13888 12 10	17810 1 0	27847 4 11	27847 4 11	....	335808 16 9	12690 12 9	163011 2 10
1865. .	56432 4 5	Half year . . 3 6 " . . 3 2	13086 10 9	17587 0 11	25758 12 9	25758 12 9	....	306931 2 2	13050 6 6	180598 3 9
1866. .	52553 2 10	. . . . . 3 2	13252 13 0	19784 2 0	19516 7 10	19516 7 10	....	347472 2 11	13817 2 9	200382 5 9
1867. .	47323 0 4	. . . . . 3 2	14167 11 7	19898 0 4	13257 8 5	13257 8 5	....	331725 9 7	14628 8 6	220280 6 1
1868. .	49546 4 7	. . . . . 3 2	14314 17 9	20246 0 5	14985 6 5	14985 6 5	....	351035 10 4	15173 2 5	239685 15 6
1869. .	52736 18 4	. . . . . 3 2	15467 12 6	22688 14 4	14580 11 6	14580 11 6	....	395469 8 5	15387 15 7	262374 9 10
Total.	533214 4 0		146946 16 10	18[illegible]10 19 2	198026 8 0	172044 3 7	25982 4 5		125965 17 4	

METROPOLIS GAS SUPPLY.

COURT OF COMMON COUNCIL—GUILDHALL, NOV. 5.

A Special Court was held this day—the Right Honourable the LORD MAYOR (Alderman Lawrence) presiding.

Dr. LETHEBY presented the following report:—

THE CITY OF LONDON GAS ACT, 1868.

To the Right Honourable the Lord Mayor, Aldermen, and Common Council of the City of London.

My Lord Mayor and Gentlemen,—In pursuance of the 51st section of the above-mentioned Act of Parliament, I have the honour to report to you that I have received from the secretary of the Great Central Gas Consumers Company a letter, dated the 1st inst., informing me that, as the company think themselves aggrieved by the reports of the gas examiner appointed by the corporation—stating that their gas contained traces of sulphuretted hydrogen on the 25th of October last and four following days—they have appealed to me, in accordance with the provisions of the said recited section of the Act of Parliament.

Consequently, with the view of inquiring into the matter, and hearing the parties concerned, I proceeded on the 3rd inst. to the testing-station, at 7, Friendly Place East, Mile End, where I met the gas examiner (Mr. Heisch) and the engineer of the company (Mr. Harris), both of whom afforded me all necessary assistance in the inquiry.

I ascertained that the gas had been tested on the several days alluded to in strict accordance with the instructions of the referees of September last, and that the slips of bibulous paper, prepared with a solution of sugar of lead, and exposed to the action of the gas continuously during the whole time that the testings for illuminating power were being made on the days referred to, were discoloured; the discoloration on the 25th of October being but slight, while that of the following days was successively deeper and deeper. On the 30th of October the paper was not discoloured, but it was discoloured on the 1st and 2nd of November, the first being the most marked. There can be no doubt, therefore, that sulphuretted hydrogen was present in the gas supplied to the testing-station on the 25th, 26th, 27th, 28th, and 29th of October, and on the 1st and 2nd of November, contrary to the provisions of the 39th section of the above-mentioned Act of Parliament.

Proceeding with my inquiries, I was informed by Mr. Harris that he had discovered sulphuretted hydrogen in the gas of one of the gasholders at the works of the company, and that he was unable to account for it, as no trace of it had been observed on the test-papers exposed to the gas as it was being delivered to the gasholder, and that the purifiers were neither exhausted nor overworked. On visiting the works I ascertained, by experiment, that the gasholder in question contained gas which was charged to some extent with sulphuretted hydrogen, and that to prevent its being delivered to the public, the engineer had diverted the gas from the mains, and was subjecting it to a second purification. I also examined one of the purifiers of the gas, and I saw, from the clean condition of the oxide of iron upon the uppermost tray, that it had not been exhausted or overworked. I conclude from these facts that the excess of impurity in the gas had been occasioned by some such accident as the leakage of a valve, or the disturbance of a valve by mistake at the time of changing a purifier, whereby a little impure gas was delivered into the gasholder. But although this was, in all probability, the original cause of the presence of sulphuretted hydrogen in the gas, yet I cannot certify that the continued delivery of such impure gas for six days after the notice from the gas examiner was either accidental or unavoidable; for, as the impure gas was confined to a single gasholder, it was manifestly the duty of the company to discover that fact, and to shut off the holder from the main directly the notice of impurity was received. I am, therefore, of opinion that, after making allowance for the impurity of the gas on the 25th and and 26th of October as being unavoidable and accidental, the excess of impurity on the 27th, 28th, and 29th of October, and on the 1st and 2nd of November, was not occasioned by an unavoidable cause or accident.

In concluding this report, I think it is necessary that the referees should be informed of the desirability of preserving the bad test-papers in a stoppered bottle at the testing-stations, and not by fixing them in a book as they have prescribed, for it is not possible to preserve with any degree of certainty the exact condition of the papers in this manner.—I remain, your obedient servant,

HY. LETHEBY, Chief Gas Examiner.

17, *Sussex Place, Regent's Park, Nov.* 4, 1869.

THURSDAY, NOV. 18.

At the Meeting of the Court this day—the Right Honourable the LORD MAYOR (Alderman Besley) in the chair,

Mr. BONTEMS, chairman of the Gas Committee, brought up a report on the undermentioned references, viz.:—To consider the report upon the letter from the Board of Trade, with notice of application to Parliament for the amendment and extension of the City of London Gas Act, 1868. On the letter of the gas referees, on having appointed four testing-places for gas supplied to the City of London, and recommending that the following assistants to Mr. Heisch, the gas examiner to the corporation of London, be appointed gas examiners, viz.:—Mr. F. J. M. Page, Mr. R. Brine, Mr. J. P. Fewtrell, Mr. W. C. Young. On the reference to present a petition to Parliament against the Great Central Gas Consumers Company's bill; and on the reference to consider the letter of the Board of Trade, on the appointment of officers under the gas Acts. It was explained, in the report with reference to the appointment of gas examiners, that it was found impossible for one person to attend to the testing at the several stations, and it was, therefore, suggested that the assistants of Mr. Heisch should be clothed with the requisite authority, it being agreed that they should continue to be paid as they now were by Mr. Heisch, but that they should be subject to suspension by the committee. With regard to the Great Central Gas Company's bill, it was mentioned that the company applied for parliamentary powers to raise £200,000 additional capital, and to borrow £25,000, in reference to which evidence was given before the committee of the House of Commons to whom the bill was referred, and they ultimately threw it out, declaring that the preamble had not been proved, and added their opinion that there had been no sufficient audit or supervision of the accounts of the company, and that the defalcations extending over a period of between six and seven years exceeded the sum of £71,000. With regard to the appointment of officers under the gas Acts, the committee thought that no final arrangements should be made until the arrangements for the amalgamation of the City and Chartered Gas Companies were completed.

Mr. BONTEMS briefly moved the adoption of the report, and that it be printed and circulated amongst the members, which was agreed to.

METROPOLITAN BOARD OF WORKS.

FRIDAY, NOV. 12.

At the Meeting of the Board this day—Sir JOHN THWAITES in the chair—the Works Committee presented the following report on

THE CITY AND CHARTERED GAS COMPANIES AMALGAMATION.

Under the reference of the 15th ult. (No. 23), your committee have considered a letter from the Board of Trade, forwarding copy of a notice and scheme for the amalgamation of the City of London Gas Company with the Gaslight and Coke Company. On examination of the scheme in question, your committee find that it contains no sufficient provisions for the realization and conversion into money of the works and property in the metropolis which the companies now hold, and which, on the completion of the new works of the Gaslight and Coke Company at Barking, will be given up. It appears to your committee important in the interests of the consumers that a clause to this effect should be inserted in the scheme, and that the net proceeds should be applied in reduction of the borrowed capital of the united company. Your committee are also of opinion that there should be a provision that any compensation received by the City of London Gas Company from this board, or from the Metropolitan District Railway Company, in respect of the interference with the company's works at Blackfriars, shall be applied in like manner, and a provision that all the works shall be removed from the metropolis within a stated time. With these exceptions your committee see no objection to the scheme; and they recommend that it be referred to the parliamentary committee to endeavour to obtain the insertion of clauses for effecting the objects above mentioned.

The report was adopted.

The Works Committee also made the following report on

THE METROPOLIS WATER SUPPLY.

Your committee have considered your resolution of the 12th of October, 1866 (No. 35), referring to them the question of the water supply to the metropolis, to report thereon to the board, with such recommendations as they might deem advisable for an increased supply and of better quality. Your committee, upon the passing of the above resolution, took immediate steps for proceeding upon the reference made to them, and caused communications to be addressed to the several vestries and district boards of the metropolis, and to the local authorities of the towns in which the system of a constant supply of water was in operation, with a view of obtaining full information as to the working of that system, and whether any mechanical or other difficulties had arisen in carrying it out. Several replies were received by your committee to these communications; but in the meantime, namely, on the 14th of December, 1866, the chairman of the board, whom your committee had requested to confer with the Government for the purpose of ascertaining their intentions with regard to this subject, informed the board that it was the intention of the Government to recommend Her Majesty to issue a commission for inquiry into the question of the water supply of the metropolis generally. Under these circumstances, your committee considered it desirable to defer any further action upon the reference until the Royal Commission should have concluded its labours and presented a report. This has now been done, and copies of the very valuable report, and of the evidence taken by the commission, have been furnished to the members of your honourable board. Since the issuing of the report, your committee have again had this subject before them, and have considered with the greatest attention the important statements and suggestions contained in the report of the commission, and they beg now to state the conclusions at which they have arrived, and which are based generally upon that report. The committee feel that, as the board will themselves have an opportunity of fully discussing the question, it is unnecessary to enter into it at length in the present report. They simply desire to state that, upon the general grounds of economy and public advantage, they are unanimously of opinion that a constant supply of water to the metropolis is most desirable. The committee have considered as to the course which should be taken by the board, in the event of their adopting this view, for giving it practical effect; and it appears to them that the best plan will be that the chairman should be requested to seek an interview with the Home Secretary, for the purpose of inquiring if it is the intention of the Government to bring in a measure founded upon the report of the Royal Commission, and also to place before him the board's general approval of the report. Your committee beg to recommend this course for adoption. All which your committee beg to submit.

The consideration of this report was deferred until Friday next.

SCRAPS FROM THE PROCEEDINGS OF THE BRITISH ASSOCIATION AT EXETER.

Section G.—Mechanical Science.

WASTE OF FUEL.

(*From the Address of* C. W. Siemens, *Esq., President of the Section.*)

The inquiries of the Royal Coal Commission into the extent and management of the coal-fields appear to be reassuring as regards the danger of their becoming soon exhausted; nevertheless, the importance of economizing these precious deposits in the production of steam power, in metallurgical operations, and in domestic use, can hardly be over-estimated. The calorific power residing in a pound of coal of a given analysis can now be accurately expressed in units of heat, which again are represented by equivalent units of force or of chemical action; therefore, if we ascertain the consumption of coal of a steam-engine, or of a furnace employed in metallurgical operations, we are able to tell by the light of physical science what proportion of the heat of combustion is utilized and what proportion is lost. Having arrived at this point, we can also trace the channels through which loss takes place, and in diminishing these by judicious improvement we shall more and more approach those standards of ultimate perfection which we can never reach, but which we should, nevertheless, keep steadfastly before our eyes. Thus, a pound of ordinary coal is capable of producing 12,000 Fahrenheit units of heat, which equal 2,240,000 foot-pounds, or units of force; whereas the very best performances of our pumping-engines do not exceed the limit of 1,000,000 foot-pounds of force per pound of coal consumed. In like manner 1 lb. of coal should be capable of heating 33 lbs. of iron to the welding-point of, say, 3000° Fahr., whereas, in an ordinary furnace, not 2 lbs. of iron are so heated with 1 lb. of coal. These figures serve to show the great field for further improvement that lies yet before us. Although heat may be said to be the moving principle by which all things in nature are accomplished, an excess of it is not only hurtful to some of our processes, such as brewing, and destructive to our nutriments, but to those living in hot climates or sitting in crowded rooms an excess of temperature is fully as great a source of discomfort as excessive cold can be. Why, then, may I ask, should we not resort to refrigeration in summer as well as to calorification in winter, if it can be shown that the one can be done at nearly the same cost as the other? So long as we rely for refrigeration upon our ice-cellars, or upon importation of ice from distant parts, we shall have to look upon refrigeration as a costly luxury only; but by the use of properly constructed machines it will be possible, I believe, to produce refrigeration at an extremely moderate expenditure of fuel and labour. A machine has already been constructed, capable of producing 9 lbs. of ice, or its equivalent, for 1 lb. of coal; whereas the equivalent values of positive heat developed in the combustion of 1 lb. of coal, and of negative heat residing in 1 lb. of ice, is about as 12,000 to 170, or as 1 to 70. This result already justifies the employment of refrigerating machines upon a large scale, but it is hard to say what practical results may yet be reached with an improved machine on strictly dynamical principles, because such a machine seems not tied in its results to any definite theoretical limits. In changing, for example, a pound of water from the liquid into the gaseous state, a given number or units of heat are required, that may be produced by combustion of coal or by the expenditure of force; but, in changing the same pound of water into ice, heat is not lost, but gained in the operation, which heat must be traceable to another part of the machine, either as sensible heat or as developed force. It would lead me too far to enter at present into particulars on this question, which is one not without interest for the physicist and the mechanical engineer.

UTILIZATION OF TOWN SEWAGE.

Mr. T. D. Barry read a paper, in which, after expressing an opinion adverse to the application of Mr. Moule's dry system to large towns, the author proceeded to criticize the irrigation system, especially as developed at Edinburgh, Worthing, and Croydon, and contended that fields subjected to constant irrigation can produce nothing but rank coarse grass, and that, if any other crop is to be grown in those fields, the flow of sewage must be discontinued. Indeed, unless this was occasionally done, he did not think irrigation would benefit land. The effects of irrigation were most beneficial on clay and sandy soils, and really good land did not give evidence of so much improvement. He could see but little difference between the effects of sewage irrigation and the pure water irrigation in Lombardy and Piedmont. The advocates of irrigation claimed that their system possessed two advantages—viz., freedom from offensive smell, nuisance, or injurious influence on the health of a district, and a remunerative return for money laid out. He proceeded to dispute both these propositions. With respect to the latter, he argued that the apparent success was due to accidental circumstances, and had no permanent reality, and brought forward several illustrations in support of his views. He also argued that the system was not so free from nuisance, &c., as was claimed for it, and quoted authorities on the matter, and then proceeded to contend that the land was deteriorated by repeated and successive applications of liquid sewage. He expressed his adherence to the system of filtration, as more suited to certain localities and large towns. He explained that, at Leamington, the town ashes, road scrapings, &c., were mixed with the sewage, and a dry manure formed, which found a ready sale among the farmers, produced good crops of all kinds of vegetables, and was prepared without any offensive or unhealthy odour.

Dr. Paul said the works at Leamington were satisfactory, as far as the eye went, but it was illusory. Only about one-fourth of the manure was taken from the water, though it seemed perfectly clear. Four per cent. of ammonia was the only component in the manure produced at Leamington which was of any value, and at places where much manure was produced it was sold at from 6d. to 2s. per ton. With regard to the question of profit and loss, he held that the towns must be expected to pay for getting rid of their refuse, and the real profit was the improvement of the land. He did not see the greater danger to health of spreading the sewage on the land than of pouring it into the water we drink.

Mr. Rumney said it had been stated that either irrigation or filtration must be adopted. This he denied, and explained a plan which is being adopted under the Artisans Dwelling-House Act at Manchester, which he thought preferable to either.

Mr. Hope (of the Barking Sewage Farm) joined issue with Mr. Barry, and defended the judicious use of liquid sewage, and said that where it had failed it was due to mismanagement.

Mr. Stanford compared a company looking for profit from the deposit of sewage to a ferret watching one hole of a rabbit burrow while the rabbit ran out of the other. Irrigation was not adapted to all towns, and he thought it better to make sewage solid by mixing it with something else, and carrying it away, as in Manchester.

Admiral Belcher said that in China and Malay the excreta was allowed to be in proximity to the houses, but no malaria resulted; but if water were allowed to flow over it fermentation would ensue, and bush fever would follow. The drainage system which we had adopted robbed the land of the fertilizing salts, and conveyed them to the rivers. He was the originator of the Thames sewage scheme, and he had suggested that the outlet should be extended through Essex, and be delivered by the river Crouch into the German Ocean.

Mr. Barry said he was afraid the dry system mentioned as in operation at Manchester would not answer, because of the difficulty of administration, and the annoyance and danger of carrying the excreta through the houses.

Section A.—Mathematical and Physical Science.

REPORT OF THE COMMITTEE ON UNDERGROUND TEMPERATURES.

Mr. G. J. Symons read the report of the committee on underground temperatures. He stated that he was only one of the members of the committee, but the duty of the reading of the report fell on him in consequence of the absence of the chairman, Professor Sir William Thompson, and of the secretary, Professor Everett, of Glasgow University. The report set forth that the committee had tried experiments on underground temperatures at Glasgow, Dundee, and wherever they could get access to very deep wells or borings in the earth. But the chief experiment had been tried in a well made many years ago at Kentish Town, by a company formed for the purpose of supplying the district with water. The total depth, in this instance, was 1032 feet, 540 feet of which consisted of a bricked well, and the remainder of a boring lined with thin sheet iron. The well was made first, but as the people in the neighbourhood complained of the hardness of the water, the boring was done, the result being that the supply of water fell off, and the company ruined itself after spending £100,000 on the works. The committee had obtained the use of the old well, and fitted up winding apparatus above it in a hut, to let specially constructed thermometers up and down in the boring. The general result of the experiments was to prove an increase of temperature of 1° for every 52·4 feet increase in depth.

Mr. S. J. Mackie, F.G.S., said that he thought the theory of the internal fluidity of the globe was untenable. Yet if the increase in temperature, mentioned by Mr. Symons, continued the same at all depths, at about 450 miles below the surface of the earth the temperature must be equal to that of the surface of the sun. From diagrams on the wall he noticed that the increase of temperature only became regular after the bricked portion of the wall was passed and the boring reached. He thought that, perhaps, the conduction of the iron tube would tend to equalize the temperature, and that if the sides of the boring had been rock, irregularities in temperature would have been recorded.

Mr. Symons said that the iron tube was thin—only about 1-10th of an inch in thickness—and 8 inches in diameter. It would be a good plan to sink a short length of such a tube in the ground, and to find out whether its conduction of heat influenced the results.

Section B.—Chemical Science.

A paper by M. Morren was read by Mr. R. B. Hayward, M.A., detailing some experiments on the action of light upon vapours and gases confined in tubes. The experiments were of the same nature as those performed by Professor Tyndall, wherein the action of a conical beam of intense light from the electric lamp was seen to set up cloudy chemical decomposition in certain transparent vapours from organic volatile liquids. M. Morren, who lives in the south of France, was able to do away with the electric light, and to use sunlight in its place. His experiments were tried with inorganic substances, so as to render easier the task of deciding upon the actual nature of the chemical decomposition set up by light, and in the course of his researches he discovered a source of error in the method of working adopted by Professor Tyndall. The glass experimental tube was of the same description as that used by Professor Tyndall; it had flat ends of glass, fixed to the tube itself by brass ferrules and cement, the ferrules being fitted with stop-cocks for the exhaustion of the air. M. Morren introduced a mixture of perfectly pure and dry hydrogen and nitrogen gases into his exhausted tube, and on sending a beam of sunlight through the long axis thereof, he was surprised to see signs of chemical action in the shape of the formation of a cloud. This phenomenon led him to suspect that the resinous cement used to fix on the ends of the tube had, perhaps, liberated some volatile hydrocarbon to mix with his pure permanent gases. He accordingly made another tube, and used cement free from this objection, but the cloud was formed as before. Lastly, he suspected the arrangement for drying the gases, which consisted of powdered glass wetted with sulphuric acid, and, on substituting chloride of calcium as the drying agent, no cloud was formed on the repetition of the experiment. In the end, he found out that even the purest sulphuric acid, quite free from arsenic and other foreign

substances, liberates traces of sulphurous acid gas, and thereby causes the formation of a cloud. This fact shews that in some cases this method of experimenting is a very delicate test for the presence of certain chemical substances. Moreover, the discovery made by M. Morren affects a large number of the experiments on the action of gases upon radiant heat made by Professor Tyndall, and published by him in his celebrated work, "Heat Considered as a Mode of Motion." In all those experiments Dr. Tyndall dried his gases by means of powdered glass and sulphuric acid, so that, as shown by M. Morren, traces of sulphurous acid gas must always have been present in his experimental tube, and influencing the result to a certain extent.

DR. FRANKLAND'S ANALYSIS OF THE METROPOLITAN WATERS IN OCTOBER, 1869.—"Royal College of Chemistry, Oct. 29, 1869.—Sir,—I have the honour to submit to you in the following table the results of the chemical examination of the waters supplied to the metropolis during the month of October. For the purpose of comparison I append also the results yielded by the waters supplied to the towns of Edinburgh, Newcastle, Glasgow, Manchester, Bristol, Dublin, and Norwich, and by samples of Thames water taken at London Bridge at low and high water; also by the well waters from the artesian well in Trafalgar Square, from the Royal Mint, and from Barclay's Brewery. My observations on the turbidity of the water supplied to London were begun in January, 1867, and for the first time since their commencement the whole of the samples, *without a single exception*, were this month delivered from the companies mains in a clear and transparent condition.

Companies.	Date and Place of Collection.	Temperature in Centigrade Degrees.	Total Solid Impurity.	Organic Carbon.	Organic Nitrogen.	Ammonia.	Nitrogen, as Nitrates and Nitrites.	Total combined Nitrogen.	Previous Sewage Contamination (Estimated).	Chlorine.	Total Hardness.
Thames.											
Chelsea.....	Oct. 9 — Cab Rank, Horse Guards.....	15·0	25·52	·178	·019	·000	·113	·132	810	1·65	19·2
West Middlesex	Oct. 9 — Cab Rank, Portland Road..	15·5	23·52	·116	·017	·001	·155	·173	1240	1·65	18·1
Southwark & Vauxhall..	Oct. 9 — Cab Rank, Saint George's Ch.	16·1	25·00	·192	·019	·001	·161	·181	1300	1·60	19·9
Grand Junction.....	Oct. 9 — Cab Rank, Woodstock Street.	14·7	25·44	·157	·016	·000	·178	·194	1460	1·70	18·9
Lambeth....	Oct. 9 — Cab Rank, Lambeth Road..	15·0	25·80	·191	·020	·000	·143	·163	1110	1·65	19·8
Other Sources											
New River...	Oct. 9 — Cab Rk., Tottenham Ct. Rd.	15·3	25·01	·060	·019	·000	·175	·194	1430	1·50	19·2
East London.	Oct. 8— Slater's, Old Ford Road .	15·5	27·20	·119	·016	·000	·129	·145	970	1·70	21·8
Kent.....	Oct. 8 —Deptford Bridge Police Statn.	13·6	42·20	·071	·025	·000	·439	·464	4070	2·80	31·2
Edinburgh Waters.											
Crawley Burn	Sept., 1868.		11·28	·187	·031	·001	·000	·032	0	1·042	6·1
Comiston Wr.			22·58	·085	·017	·001	·744	·762	7124	1·886	10·4
Swanston Wr.			12·70	·378	·059	·001	·000	·060	0	1·390	6·2
Colinton Wr.			14·10	·203	·042	·000	·000	·042	0	0·894	9·2
Newcastle...	September ..		23·40	·237	·062	·000	·000	·062	0	1·588	13·9
Loch Katrine	July, Glasgow		3·00	·161	·011	·001	·000	·012	0	·905	0·3
Manchester..	June, 1868....		6·20	·183	·009	·006	·025	·039	0	1·117	3·7
Bristol.....	Feb., 1869 — Water-Works		28·66	·160	·017	·001	·203	·221	1720	1·3	24·46
Dublin.....	April, 1869 — Water supply		6·34	·238	·024	·001	·000	·025	0	1·24	2·97
Norwich.....	Sept., 1868— Norwich w. s.		28·18	·227	·055	·000	·000	·055	0	2·631	23·68
Thameswater filtered....	April 27, 1869, Lond. Bridge, mid-stream at low water		30·35	·455	·075	·032	·181	·282	1750	1·95	22·7
	at high watr		92·85	·540	·122	·025	·394	·587	3830	31·5	23·9
Artesian well water.....	May 6, 1869— Trafalgar Sq.		83·4	·150	·012	·070	·000	·070	260	16·55	5·92
Deep Chalk well water.	June, 1869— Royal Mint.		83·96	·193	·025	·060	·000	·074	170	13·92	17·48
Deep well wr.	July, 1869— Barclay's B.	12·1	73·3	·085	·008	·060	·000	·057	170	14·08	7·33
Column 1	2	3	4	5	6	7	8	9	10	11	12

The numbers in columns 4, 5, 6, 7, 8, 9, 10, 11, and 12 all relate to 100,000 parts of the waters. The table is to be read thus: The Chelsea Company's water collected on the 9th of October, at the Horse Guards cab rank, had a temperature of 15·0° Cent.; 100,000 lbs. of it contained 25·52 lbs. of solid impurity; the organic matter, constituting a portion of this impurity, contained ·178 lb. of carbon and ·019 lb. of nitrogen. This solid impurity also contained ·113 lb. of nitrogen in the form of nitrates and nitrites, and no ammonia, whilst the total amount of *combined* nitrogen in every form was ·132 lb. The above quantity of water supplied by the Chelsea Company had been, after its descent to the earth as rain, contaminated with sewage or manure matter equivalent to 810 lbs. of average filtered London sewage. By gradual oxidation, partly in the pores of the soil, partly in the Thames and its tributaries, and partly in the reservoirs, filters, and conduits of the company, this sewage contamination had been converted into innocuous inorganic compounds before its delivery to consumers. The above quantity of water also contained 1·65 lb. of chlorine. Finally, 100,000 lbs. of the Chelsea Company's water contained 19·2 lbs. of carbonate of lime, or an equivalent quantity of other soap-destroying ingredients.—I have, &c., E. FRANKLAND.—The Registrar-General, &c."

AVERAGE COMPOSITION AND QUALITY OF THE METROPOLITAN WATERS IN OCTOBER, 1869.—The following are the returns of the Metropolitan Association of Medical Officers of Health:—

Names of Water Companies.	Total Solid Matter per Gallon.	Oxygen required by Organic Matter, &c.	Nitrogen.		Hardness.	
			As Nitrates, &c.	As Ammonia.	Before Boiling.	After Boiling.
Thames Water Comps.	Grs.	Grs.	Grs.	Grs.	Degs.	Degs.
Grand Junction. . . .	17·63	0·072	0·049	0·001	13·2	3·2
West Middlesex	16·80	0·064	0·049	0·000	12·6	3·0
Southwark and Vauxhall.	18·23	0·079	0·069	0·000	14·1	3·3
Chelsea	17·37	0·069	0·123	0·002	13·4	3·3
Lambeth	17·13	0·058	0·129	0·001	13·1	3·0
Other Companies.						
Kent	28·97	0·041	0·190	0·000	20·1	6·0
New River	18·30	0·059	0·066	0·000	13·8	3·3
East London.	16·77	0·066	0·066	0·000	13·0	3·4

Note.—The amount of oxygen required to oxidize the organic matter, nitrites &c., is determined by a standard solution of permanganate of potash acting for three hours; and, in the case of the metropolitan waters, the quantity of organic matter is about eight times the amount of oxygen required by it.

The average quantity of water supplied daily to the metropolis during the preceding month was, according to the returns of the water companies to the Medical Officers of Health, 106,740,029 gallons, and the number of houses supplied was 468,127. This is at the rate of 33·6 gallons per head of the population daily. HY. LETHEBY, M.B.

DR. WHITMORE'S REPORT ON THE QUALITY OF THE WATER SUPPLIED IN ST. MARYLEBONE, IN OCTOBER, 1869:—

October.	Total Solid Matter in degrees or grains per Imperial gallon.		* Loss by Incineration of Solid Matter in previous column.		Ammonia.
	Oct., 1868. 0°	Oct., 1869. 0°	Oct., 1868. 0°	Oct., 1869. 0°	0°
Distilled Water . . .					
West Middlesex water	18·16	16·96	0·72	0·56	—
Grand Junction water	19·04	16·72	0·80	0·64	—

* The loss by incineration represents the amount of organic and other volatile matters contained in an Imperial gallon (70,000 grains) of water.

DR. WHITMORE'S REPORT ON THE QUALITY OF THE GAS SUPPLIED IN ST. MARYLEBONE, IN OCTOBER, 1869:—

October.	Illuminating Power in Sperm Candles.			Mean Pressure in Tenths of an Inch.		Mean Quantity of Sulphur in 100 Cub. Ft.	Mean Quantity of Ammonia in 100 Cub. Ft.	Sulphuretted Hydrogen.
	* Mean of 25 Obser.	Highest.	Lowest.	Highest.	Lowest.	Grains.	Grains.	
Imperial Company's gas . .	15·70	16·59	15·03	22·31	10·17	26·50	2·72	None.
Chartered Company's common gas	14·17	14·74	13·93	37·57	14·94	25·59	4·11	None.
Chartered Company's cannel gas	20·64	21·33	19·99	35·21	15·02	21·11	4·75	None.

Oct.—Mean of daily readings of Barometer, 29·81
" " " Thermometer, 58·33

* Each observation consists of 10 readings of the photometer, at intervals of one minute.

The gas of the Imperial Company gave, during the month, a mean illuminating power equal to 15·70 sperm candles; on eight occasions it exceeded 16 candles, and on no occasion did it fall below 15 candles; its lowest range was therefore a candle in excess of what will be required by the Act which comes into operation on the 1st of January next. Its pressure was good. The quantity of ammonia found in 100 cubic feet of this gas did not amount to 3 grains, being 2 grains less than what is permitted by law, but the sulphur found in it was large in quantity, amounting to 26½ grains in each 100 cubic feet. The mean illuminating power of the Chartered common gas was 14·17 candles, or 0·17 candles above the legal standard, but on five occasions it was less than the standard; its pressure was uniformly high. The quantity of sulphur contained in 100 cubic feet of this gas amounted to 25½ grains, but ammonia was found only to the extent 4·11 grains. The cannel gas gave a mean light equal to 20·64 candles, or 0·64 above the standard. The pressure of this gas was also good. Sulphur impurity was found to the extent of 21·11 grains per 100 cubic feet, and ammonia to the extent of 4·75 grains. In none of the gases was the presence of sulphuretted hydrogen once detected. It is satisfactory to notice that during the past month these three gases contained less impurity than has hitherto been usually found. The above results were obtained from the Imperial Company's gas, manufactured at their Fulham works, and from the common and cannel gas of the Chartered Company, manufactured at their works in Horseferry Road, Westminster.

QUALITY OF THE GAS SUPPLIED AT GRAVESEND.—At the monthly meeting of the Improvement Commissioners, held on the 5th inst., the report of the inspector of gas was read. It appeared that the illuminating power of the gas was equal to 17·14 sperm candles, consuming 120 grains per hour. It was free from any trace of sulphur, but there were slight traces of ammonia. The new burners were the cause of the increased illuminating power. Had the old burners been on, the illuminating power would have been equal to 15 sperm candles only.

Chagford New Gas-Works.—The opening of these works, designed and erected by Mr. H. Willey (Willey and Ford, gas engineers, of Exeter), took place on Friday, Nov. 5, with great success. The town was brilliantly illuminated with gas devices. The church bells rang merrily, and the inhabitants thoroughly enjoyed themselves on the event. The promoters and shareholders of the company dined together at the Globe Hotel, comprising—F. Vicary, Esq. (chairman); Rev. H. G. Hames; R. Berry, Esq.; W. C. Hunt, Esq.; Messrs. Stone, Collins, Bailey, Gregory, C. Short (secretary), &c. A high compliment was paid to Mr. Willey, the engineer, for the very satisfactory manner in which the works had been executed, and for the diligence and attention he had given to the completion of them. A very merry evening was spent, and the opening of the gas-works will be a red-letter day in the calendar of Chagford.

Reductions in the Price of Gas.—Following the example set by the Equitable Gas Company, the London Company has given notice of a reduction of 3d. per 1000 feet from the 1st of January next. The West Ham Company has also given notice of a reduction from 4s. 6d. to 4s. 3d. per 1000 feet, and the Leicester Gas Company of a reduction from 3s. 6d. to 3s. per 1000 feet to the general consumer, with a further reduction of 1d. when the consumption in a quarter exceeds 300,000 cubic feet, and is less than 500,000 feet, and of 2d. per 1000 feet when the quarterly consumption exceeds 500,000 cubic feet.

Share List
OF
Metropolitan Gas Companies.

Number of Shares issued.	Amount per Share.	Name of Company.	Amount paid up p. Share.	Dividend p. Cent. p. Annum.	Price per Share.
	£		£ s. d.	£ s. d.	£
8000	10	Anglo-Romano	10 0 0	10 0 0	11 — 12
5000	20	Bahia (Limited)	20 0 0	3 0 0	9 — 11
1000	20	Do., preference	20 0 0	10 0 0	23 — 24
750	20	Do., do., redeemable	20 0 0	10 0 0	20 — 22
40000	5	Bombay (Limited)	5 0 0	4 10 0	5 — 5⅛
10000	5	Do., third issue	4 0 0	4 10 0	4 — 4⅛
10000	20	British (Limited) (Norwich, Hull-Scalcoates, Hanley, Tunstall & Shelton [Potteries], Trowbridge, & Holywell.)	20 0 0	10 0 0	30 — 31
12000	50	*Chartered*	50 0 0	6 0 0	57½ — 57¾
6060	50	Do.	45 0 0	6 0 0	52½ — 52⅝
10000	20	*City of London*, A shares	20 0 0	9 0 0	25½ — 26
10000	10	Do., B shares	10 0 0	4 0 0	6½ — 7
9629	10	Do., new shares	10 0 0	9 0 0	12½ — 13
17490	25	*Commercial*	25 0 0	10 0 0	37 — 38
20000	20	Continental Union	20 0 0	8 0 0	26½ — 27
10000	10	Do., new	2 10 0	..	4½ — 4⅝
5213	20	Do., preference	20 0 0	7 0 0	23 — 24
5000	10	*Crystal Palace District*	10 0 0	10 0 0	14¼ — 14⅝
5000	10	Do., preference	10 0 0	6 0 0	11 — 11½
10000	10	Do., new shares	10 0 0	7 0 0	11 — 11½
4000	50	*Equitable*	50 0 0	10 0 0	70 — 72
4000	25	Do., new shares	25 0 0	10 0 0	35 — 36
23406	10	European (Limited)	10 0 0	11 0 0	15 — 16
12000	10	Do., new shares (Boulogne, Amiens, Rouen, Caen, Havre, & Nantes.)	5 0 0	11 0 0	8 — 8½
20000	10	*Great Central Gas Consumers*	10 0 0	..	13 — 13¼
5000	10	Hong Kong (Limited)	10 0 0	6 0 0	8 — 10
26000	50	*Imperial*	50 0 0	10 0 0	80 — 81
26000	10	Do., new shares	4 0 0	10 0 0	7⅞ — 8
26000	12½	Do., new shares	12 10 0	7 0 0	14 — 14¼
1300	100	Do., bonds	£100	10 0 0	175 —180
28000	50	*Imperial Continental* (Amsterdam, Berlin, Ghent, Hanover, Lille, Rotterdam, Aix-la-Chapelle, Antwerp, Bordeaux, Brussels, Cologne, Frankfort-on-Maine, Haarlem, Stolberg, Toulouse, & Vienna.)	43 15 0	16 0 0	124 —127
400	100	Imperial Mexican (Limited)	100 0 0	nil.	
200	100	Do., new	100 0 0	nil.	
3000	40	*Independent*	40 0 0	10 0 0	52 — 54
3000	10	Do.	10 0 0	5 0 0	7 — 8
3000	20	Do.	15 0 0	7 10 0	15 — 16
7133	50	*London*	50 0 0	10 0 0	75 — 77
5610	25	Do., 1st preference	25 0 0	6 0 0	26 — 28
503	50	Do., 2nd preference	50 0 0	6 0 0	
214	50	Do., 3rd preference	50 0 0	6 0 0	
£18781		Do., 1st preference stock		6 0 0	
£11828		Do., 2nd preference stock		5 0 0	
		Nictheroy, Brazil (Limited)			
15000	5	Malta and Mediterranean (Limited)	5 0 0	3 10 0	3¼ — 4
6000	5	Do., preference	5 0 0	7 0 0	4¾ — 5⅛
30000	5	Oriental (Calcutta)	5 0 0	10 0 0	8 — 8¼
30000	5	Do., new shares	1 0 0	10 0 0	2⅛ — 2⅜
10000	5	Ottoman (Limited)	5 0 0	nil.	1⅝ — 2¼
12500	10	Pará (Limited)	10 0 0	7 10 0	8½ — 9
27000	20	*Phœnix*	20 0 0	10 0 0	30 — 30½
3600	100	Do., new	35 0 0	7 10 0	36 — 36½
144000	Sk.	Do.	100 0 0	5 0 0	73¼ — 74¼
5000	20	*Ratcliff*	20 0 0	10 0 0	23 — 24
	20	Rio de Janeiro (Limited)	20 0 0	10 0 0	25 — 25½
6959	5	Singapore (Limited)	5 0 0	4 0 0	
2000	5	Do., preference	5 0 0	7 10 0	
		Shanghai			
4800	50	*South Metropolitan*	50 0 0	10 0 0	76 — 78
4800	12½	Do., new shares	12 10 0	10 0 0	19 — 19½
15000	10	*Surrey Consumers*	10 0 0	10 0 0	14½ — 15
10000	10	Do., new	6 0 0	10 0 0	8¾ — 9
9000	4	United General (Limerick)	4 0 0	5 0 0	2 — 2⅛
10000	10	*Victoria Docks*	5 0 0	6 0 0	
1500	10	*Wandsworth and Putney*	10 0 0	10 0 0	10 — 12
1500	10	Do.	10 0 0	7 10 0	
1819	10	Do.	10 0 0	7 10 0	
1138	10	Do.	5 0 0	7 10 0	
20000	10	Western (Limited) A shares	10 0 0	10 0 0	15½ — 15⅝
10000	10	Do., B shares	7 0 0	10 0 0	9¾ — 10
10000	10	Do., C shares	7 0 0	10 0 0	9¾ — 10
20000	10	Do., D shares	1 0 0	10 0 0	1½ — 2
10000	5	*West Ham*	5 0 0	7 10 0	7 — 7¼
551	10	West London Junction (Limited)	10 0 0	6 0 0	
520	10	Do., preference	10 0 0	6 0 0	

Price Current.

CASTINGS.—*Per Ton.*

Average Weight of Cast-iron Gas-pipes, per Yard.

1 in.	2 in.	2¼ in.	3 in.	4 in.	5 in.	6 in.	7 in.	8 in.	9 in.	10 in.	12 in.
16	21	28	33	51	70	89	107	126	149	177	208 lb.

Retail Prices are 5 to 10 per cent. higher.	London.	Glasgow.	Newcastle and Middlesboro'.	Wales.	Yorkshire, Derbyshire, and Staffordshire.
	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.
Pig Iron, No. 1 (g.m.b.)	3 15 0	2 14 6	3 10 0	3 10 0	3 10 0
1¼ and 2-inch Socket-pipes	7 0 0	5 15 0	5 10 0	6 0 0	7 0 0
2¾ and 3-inch ditto	6 10 0	5 5 0	5 0 0	5 15 0	6 10 0
4 and 5-inch ditto	6 0 0	4 15 0	4 10 0	5 5 0	6 0 0
6 inches and upwards ditto	5 15 0	4 5 0	4 0 0	5 0 0	5 15 0
Retorts, 1st fusion, hot blast	5 10 0	4 10 0	4 5 0	5 0 0	5 10 0
Ditto, 2nd ditto, cold ditto	6 10 0	—	—	—	6 10 0
Tank-plates, ¾ thick and above	6 0 0	5 0 0	4 15 0	5 10 0	6 0 0

WROUGHT-IRON TUBING,
Subject to 60 per cent. Discount.

	2 in.	1½ in.	1¼ in.	1 in.	¾ in.	½ in.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Patent Welded Tubes, from 2 to 14 feet —per foot	1 8	1 1	0 10	0 7	0 5	0 4½
Ditto ditto, from 12 in. to 23½ in.—each	3 0	2 0	1 6	1 1	0 9	0 8
Long Screws, from 12 in. upwards	4 0	2 3	2 0	1 6	1 3	0 11
Bends and Springs	4 3	2 3	1 9	1 3	0 11	0 8
Sq. Elbows, equal or reducing; Round Elbows, 5 per cent. extra	3 9	2 3	1 9	1 3	0 10	0 8
Tees, wrought or cast	4 0	2 6	2 0	1 6	1 1	0 9
Crosses, ditto, equal or reducing	4 9	3 6	3 0	2 3	1 9	1 6
Iron Cocks	20 9	13 0	10 0	7 3	5 0	3 8
Ditto, with brass plug	28 0	16 0	13 0	7 0	5 6	4 6
Diminishing Sockets, Caps, Plugs, and Nipples	1 3	0 9	0 8	0 6	0 5	0 4½
Plain Sockets	1 0	0 8	0 7	0 5	0 4	0 3
Syphons, 2-quart	15 0	14 0	13 6	13 0	12 0	—

GAS COALS.

Newcastle—Unscreened:—	Per Ton. 6s. 6d.
Haswells, Nettlesworth Primrose, and South Pelaw	
Felling, Framwell Gate, North Pelton, Redheugh Main, Walker's Primrose, West Wear, and Whitwell Primrose	6 9
Burnhope, Craghead, Charlaw, Derwent, East Castle, Edmondsley, Eighton Moor, Hartlepool Pelaw, Holmside, Lambton's Gas, Lanchester Pelaw, Medomsley, Mickley, New Pelaw, Pelaw Main, Ravensworth, Seaham, South Moor Pelton, South Leverson, Townley Main, Tyne Main, West Pelaw, Wearmouth Hutton, and Witton	7 0
Pearith, Ravensworth Pelaw, Waldridge, West Garesfield, and West Pelton	7 3
Brancepeth, Dean's Primrose, Londonderry Gas, New Pelton, Pelton, South Pearith, Stella, Urpeth, Washington Hutton, and West Leverson	7 6
Ramsay's Newcastle Cannel	15 0
Scotch Cannel:—	Per Ton.
Boghead—at Bo'ness, 47s. 6d.; at Leith 48s. 3d.	
Muirkirk	27 0
Kirkness, best (at Burntisland)	26 6
Capeldrae, 1st quality (at ditto)	25 6
Ditto, 2nd ditto (at ditto)	18 6
Cowdenbeath	12 0
Lesmahago (at Glasgow)	31 6
Ditto (at Granton)	32 6
Arniston	27 6
Wemyss, f.o.b.	22 6
Haywood, Wilsontown (at Granton)	23 0
Wigan Cannel (at Liverpool)	17 0
Scotch Cannel:—	Per Ton
Pirnie, or Methill	17s. 0d
Lothian's Cannel (f.o.b. at Leith)	26 0
Bo'ness Cannel (at Bo'ness)	19 6
Myles' Cannel	23 6
Kinnall (at Bo'ness)	17 6
Lochore Parrot (at Burntisland)	26 0
Lanemark (at Glasgow)	16 0
Elphinstone Tower (at Leith)	20 0
Coppa Cannel (on rails at Birkenhead)	14 9
Ditto ditto (ditto at Connah's Quay)	14 2

FREIGHTS.

Coast-wise—Newcastle:—	Per Ton. 6s. 8d.	*Foreign:*—	Per Keel. £20 0s.
Chatham and Rochester		Barcelona	
Cork	10 0	Bordeaux	13 0
Dover, Folkestone, and Ramsgate	7 0	Boulogne and Calais	8 0
Dublin	10 6	Cadiz	13 10
Exeter Quay	10 6	Cronstadt	—
Ipswich	5 0	Copenhagen	10 5
London (from Leith)	8 6	Genoa	18 0
London (Pool)	7 0	Hamburg	10 0
Lowestoft and Yarmouth	4 6	Havre de Grace	10 6
Portsmouth and Southampton	8 0	Leghora	17 15
Plymouth	9 6	Lisbon	12 10
Shoreham	7 6	Rotterdam	9 0
Whitstable	6 6	Stettin	9 10
Weymouth	8 6	Trieste	13 10
		Venice	13 10

SUNDRIES.

Best Newcastle Fire-bricks, per 1000	£2 10s. to £2 15s. 0d.
Cliff's Fire-bricks (at Wortley), per 1000	2 15 6
Ingham's ditto (at Wortley), per 1000	2 15 0
Farnley Iron Co.'s Fire-bricks (at Wortley), less discount	2 17 0
Fire-clay Retorts, per foot run	5s. 6d. to 0 7 6
Tarred Rope Yarn, per cwt.	1 0 0

CHEMICAL, MINERAL, AND METAL MARKETS.

[*From* J. Berger Spence and Co.'s *Weekly Report.*]

CHEMICALS.

Since our last report the business transacted in chemicals has been of a very satisfactory nature, principally for home consumption, the majority of the large buyers having taken advantage of the present low prices in the staple articles to secure sufficient for their requirements during the ensuing year. The reduction in pyrites has created a more lively feeling amongst the alkali makers, and it will doubtless again have the tendency to stimulate them to an unnecessarily increased production. In Minerals of all descriptions the amount of business negotiated during the past week has been unusually large, exclusive of the public sales, but more especially in lead, zinc, and copper ores, the standard of the latter having slightly advanced. In Metals there is little of importance to report. A considerable amount of business has been done in pig iron during the week, and prices close very firm and steady. Manufactured iron quiet, buyers not having yet realized the advance. Copper is in moderate demand, and smelters are firm at present prices. Tin and spelter are at nominal values, with an average business. Lead is selling freely, and present prices are readily obtainable.

SODA.—Large contracts have been concluded in Soda Ash and Caustic Soda for 1870 consumption, at present low rates, of from £7 to £7 5s. per ton for 48 per cent. Ash, and £13 to £13 5s. Caustic at 60 per cent. Crystals have also met with heavy sales, at £3 15s. to £3 17s. 6d. Bicarbonate more in request, at £9 10s.

NITRATE OF SODA has fluctuated between 15s. and 16s., closing at 15s. 6d.

POTASH.—Muriates being still scarce, command £7 5s. to £7 7s. 6d. for 80 per cent.

SALTPETRE.—Not much selling, at 23s. for Calcutta, and 27s. for English Refined.

ALUM, having been well sold forward, is pretty firm at late quotations.

AMMONIA.—Sulphate remains steady at last week's prices, £17 to £17 10s. for Best White, and £16 to £17 for Grey.

COPPERAS.—Somewhat more activity displayed in Green and Rusty at 52s. Dry is in continued active request at 55s.

PYRITES.—For present consumption prices remain at previous quotations, but for spring delivery contracts have been entered into on easier terms.

LIME.—Phosphates are more inquired for, at 52s. 6d. for 65 per cent. Bleaching Powder at £8 for contracts to £8 5s. for 35 per cent. Disinfectants at 5s. 3d. per cwt. for Firsts, meet with considerable favour.

MANGANESE.—Rather under average sales, at 95s. for 70 per cent.

GUANO.—Peruvian quiet, at £12 10s.

METALS.

IRON.—Scotch Pigs firm, at 54s. 6d. to 54s. 7d. Cleveland quoted from 48s. to 45s. 6d. for Forge, and 50s. for No. 1. Welsh Bars, £6 10s. to £6 15s.; Staffordshire, £7 10s. to £8 10s.; Gas Tubes, 60 per cent. to 67½ per cent. off list; Boiler Tubes, 40 per cent. to 42½ per cent.—COPPER.—English Tough, £72 to £73; Chili Slab, £68.—TIN.—Prices are quite nominal, English Ingots being quoted at from £120 to £123; Straits, £117 10s. to £119.—LEAD.—Firm. P. G. Best English Soft Pig Lead, £19.—SPELTER.—Not much doing. Silesian, special brands, £19 10s. to £19 15s.; English, £20 10s.; Hard Spelter, for export, £16 10s.

Register of New Patents.

3764.—JOHN FLOWERS BENTLEY, of Peterborough, in the co. of Northampton, for "*Improvements in wells or apparatus for obtaining and supplying water, and in the mode of sinking or forming the same; applicable also to sinking cylinders or caissons for other purposes.*" Patent dated Dec. 10, 1868.

This invention relates primarily to sinking or forming wells by the employment of cylinders with conical ends, which are caused to enter into finely divided silica or other kinds of earthy matter.

3773.—EDWARD HODSON BAYLEY, of 42, Newington Causeway, in the borough of Southwark, in the co. of Surrey, wheelwright, for "*Improvements in filter vans and carts, and in apparatus connected therewith, some of the said improvements being applicable to filters in general.*" Patent dated Dec. 12, 1868.

In carrying out these improvements, instead of one sediment well, three wells of a cylindrical form are placed transversely across the bottom of the tank. The water in the tank flows first into the central well, to the bottom of which the sediment falls through a trap, and is drawn off by a cock. The water thus partially purified then flows through two separate pipes into the lower part of the two outer wells.

3777.—HENRY LAW, of 15, Essex Street, Strand, in the co. of Middlesex, civil engineer, for "*Improvements in water-closets.*" Provisional protection only obtained. Dated Dec. 12, 1868.

In carrying out this invention, the service-pipe, by means of which water is to be supplied to the closet, whether from a main under pressure or from an elevated cistern, is connected with a valve-cock so constructed that, upon raising the piston of the same, communication is opened between the service-pipe and a vessel of vulcanized india-rubber or other suitable elastic material, capable of expanding under pressure and of contracting upon the removal of the same, and this vessel is enclosed with a mould of the size and form which it is desired that the vessel should assume when filled with water under pressure, and of sufficient strength to resist the greatest pressure to which the vessel can be exposed.

3812.—MILES LOCKHART, of Douglas, in the Isle of Man, for "*Improved means or apparatus for ventilating, chiefly applicable to chimneys.*" Patent dated Dec. 15, 1868.

This invention consists in leading a pipe down the chimney, which pipe is turned up at its lower end, where it terminates in a box or series of tubes, or holes are formed in a corrugated plate or otherwise, each box, tubes, or plate being situated above the stove, or elsewhere, at the chimney bottom. The top of the pipe extends a little above the chimney, and carries a horizontal cup fitted with a vane which always keeps the open end of the cup to the wind. A portion of the pipe is free to revolve with the cup, and carries a guard, the back of which is always kept to the wind.

3868.—JOSEPH BRIERLEY, of Blackburn, in the co. of Lancaster, civil engineer, for "*Improved apparatus for facilitating the ventilation of sewers and drains, and the discharge of noxious gases therefrom, and for preventing the ingress of such gases to houses or buildings.*" Provisional protection only obtained. Dated Dec. 19, 1868.

In carrying out this invention an earthenware or other vessel of cylindrical or other form, having two branch arms thereto, the one connected with the drain as usual, and the other above the highest water-line in the trap, is connected with a "stand-pipe," or pipe specially arranged and employed for conducting the noxious gases to a safe point of discharge. It is preferred to have a pipe specially arranged for the purpose of discharging the gases, and provided with a receptacle for charcoal or other deodorant through which the gases pass on their way to the point of discharge. The lid or cover of the trap is provided with a pipe of such length as at once ensures the proper degree of immersion, it being no longer dependent on the care of the workman; all that is required is, on the trap being fixed, the insertion of the end of the sink or other pipe in the pipe attached to the lid of the trap, which pipe is conical or bell-mouthed to facilitate the introduction of the sink-pipe into the same.

APPLICATIONS FOR LETTERS PATENT.

3216.—PETER WALKER and ANDREW WALKER, both of 32, Brougham Road, Dalston, in the co. of Middlesex, gas-meter makers, for "*An improved gas-meter.*" (Complete specification.) Nov. 8, 1869.

3224.—ALEXANDER CARNEGIE KIRK, of Glasgow, in the co. of Lanark, N.B., engineer, for "*Improvements in or connected with retorts.*" Nov. 9, 1869.

3238.—JAMES INGLETON, of Glasgow, in the co. of Lanark, N.B., plumber, for "*Improvements in water-closets.*" Nov. 10, 1869.

3311.—PAUL NEGRIN, of Marseilles, in the empire of France, gentleman, for "*An improved arrangement for regulating the flow of liquids through pipes, valves, cocks, or other conducts.*" Nov. 17, 1869.

3322.—JOHN WOODWARD, of Queen's Foundry, New Islington, Ancoats, in the city of Manchester, in the co. of Lancaster, engineer, for "*Improvements in gas and water or other liquid meters.*" Nov. 18, 1869.

GRANTS OF PROVISIONAL PROTECTION.

2623.—FRIEDRICH WICKE, of Bockenheim, Prussia, sugar manufacturer, JULIUS BRÖNNER, manufacturer, THEODOR PETERSEN, chemist, and JOHANN GEORG ZEHFUSS, professor, all of Frankfort-on-the-Maine, in the kingdom of Prussia, for "*Certain improvements in the treatment of human excrements, whereby they are converted into an inodorous, dry, and easily portable manure.*" Sept. 6, 1869.

2814.—WILLIAM CHAMBERS, of the United University Club, Suffolk Street, in the co. of Middlesex, gentleman, for "*An improved method of and means for ventilating.*" Sept. 28, 1869.

3081.—CHARLES ANTHONY OFVERBERG, of Finsbury, in the co. of Middlesex, for "*Improvements in filters and filtering apparatus.*" A communication. Oct. 23, 1869.

3101.—THOMAS HOBY, of Glasgow, in the co. of Lanark, N.B., engineer, for "*Improvements in fireplaces for dwellings, and in arrangements in connexion therewith to promote ventilation.*" Oct. 26, 1869.

3129.—FRANCIS TAYLOR, of Romsey, in the co. of Southampton, for "*Improvements in apparatus for receiving, drying, and deodorizing human excrement.*" Oct. 28, 1869.

3146.—ROBERT JOHN EVERETT, of West Ham, in the co. of Essex, for "*An improved process for the manufacture of salts of ammonia from ammoniacal gas liquor.*" Oct. 30, 1869.

3177.—WILLIAM CONNELL, of Glasgow, in the co. of Lanark, N.B., plumber and brassfounder, for "*Improvements in water-closets.*" Nov. 2, 1869.

3181.—JOHN PRENTIS HAWLEY and EDWIN EVERED HILL, both of Brixton, in the co. of Surrey, for "*Improvements in apparatus for controlling the flow of water from constant supply-pipes.*" Nov. 2, 1869.

3182.—SIGISMUND LEONI, of 34, St. Paul Street, New North Road, in the co. of Middlesex, manufacturer, for "*Improvements in apparatus for cooking and lighting by gas.*" Nov. 3, 1869.

3186.—HENRY JAMES HOGG KING, of Glasgow, in the co. of Lanark, N.B., engineer, for "*Improvements in apparatus for measuring, indicating, and regulating the flow or passage of liquids.*" Nov. 3, 1869.

3187.—THOMAS STEPHEN MARTIN, of Plymouth, in the co. of Devon, wine merchant, for "*Improvements in the construction of self-acting stop-cocks.*" Nov. 3, 1869.

3198.—MATTHEW WILSON, of 15, Wellington Street, in the borough of Southwark, in the co. of Surrey, gentleman, for "*Improvements in sink-traps.*" Nov. 4, 1869.

3224.—ALEXANDER CARNEGIE KIRK, of Glasgow, in the co. of Lanark, N.B., engineer, for "*Improvements in or connected with retorts.*" Nov. 9, 1869.

3238.—JAMES INGLETON, of Glasgow, in the co. of Lanark, N.B., plumber, for "*Improvements in water-closets.*" Nov. 10, 1869.

NOTICES TO PROCEED.

1996.—SAM SMITHSON, of Heckmondwike, in the co. of York, dyer, and GEORGE SENIOR and JOHN INMAN, of Brighouse, in the same co., brass finishers, for "*Improvements in valves or valve-taps for regulating the discharge or flow of water or other fluids or gases.*" July 2, 1869.

2153.—ALEXANDER ROLLASON, of 123, Pembroke Road, in the parish of Clifton, in the city and co. of Bristol, chemist, for "*Improvements in the mode of extracting ammonia, purifying gas liquor, and utilizing the same.*" July 16, 1869.

2327.—JOHN THOMAS WAY, of 9, Russell Road, Kensington, in the co. of Middlesex, for "*Improvements in the manufacture of manures, and in the purification of gas.*" Aug. 3, 1869.

2330.—ISAIAH DAVIES, of Harborne, in the co. of Stafford, mechanical engineer, for "*Improvements in rotary gas-exhausters.*" Aug. 3, 1869.

2900.—JOHN WILLIAM POWELL, of East Lane, Bermondsey, in the co. of Surrey, brassfounder, for "*An improved valve-cock.*" Oct. 6, 1869.

2951.—GEORGE ANDREW MIDDLEMISS, of Sunderland, in the co. of Durham, architect, for "*An improvement in and apparatus for withdrawing water or other fluids in as pure a condition as possible from wells, cisterns, and other places where the water or other fluid is mixed with foreign matter; also to prevent the choking up of pumps and other instruments usually used for drawing off water and other fluids.*" Oct. 11, 1869.

PATENTS WHICH HAVE BECOME VOID

BY REASON OF THE NON-PAYMENT OF THE ADDITIONAL STAMP DUTY OF £50 BEFORE THE EXPIRATION OF THE THIRD YEAR.

2871.—JOHN RICHARDSON WIGHAM, "*Improvements in illuminating light-houses, private residences, railway stations, mills, factories, and other buildings, and in apparatus and gas-burners employed for that purpose.*" Nov. 6, 1866.

2873.—NATHANIEL FORTESCUE TAYLOR, "*Improvements in means for operating on air or aëriform fluids by hydrocarbons for purposes of illumination.*" Nov. 6, 1866.

2908.—JAMES THOMSON, "*Improvements in gas-stoves for heating and cooking.*" Nov. 8, 1866.

2909.—GEORGE SHAW, "*Improvements in the manufacture of coke and the small coke called bresze, and in the manufacture of coal gas.*" Nov. 8, 1866.

2927.—HENRI ADRIEN BONNEVILLE, "*An improved apparatus for pumping or ventilating.*" Nov. 10, 1866.

PATENTS WHICH HAVE BECOME VOID

BY REASON OF THE NON-PAYMENT OF THE ADDITIONAL STAMP DUTY OF £100 BEFORE THE EXPIRATION OF THE SEVENTH YEAR.

2937.—WILLIAM RENWICK BOWDITCH, "*Improvements in carburetting or naphthalizing gas, and in the apparatus employed therein.*" Oct. 31, 1862.

2963.—JAMES MUSGRAVE, "*Improvements in the valves of steam-hammers and steam, hydraulic, and gas engines.*" Nov. 3, 1862.

Advertisements.

ECONOMY IN GAS PURIFICATION.

McDOUGALL'S

HYDRATED PEROXIDE OF IRON

Is a pure artificial Oxide, free from earth or foreign matter, lasts much longer in the Purifiers than the natural Oxides, and ensures a large saving in cost of material and labour.

LONDON—11, Arthur Street West, London Bridge, E.C.; MANCHESTER—Riga Street, Shudehill.

WANTED, by a competent workman, a situation as INDEX-MAKER for wet, dry, or station meters, tell-tales, pressure registers, &c.
Address A. C., 10, De Beauvoir Crescent, Rosemary Branch Bridge, Hoxton, LONDON.

WANTED, by a gentleman, an appointment as Manager, or Secretary and Manager of Gas-Works. Has a thorough knowledge of the duties connected with the office, &c. First-class testimonials.
Addres A. B., Post-Office, Henlow, BIGGLESWADE.

TO GAS COMPANIES & GAS-FITTERS.

WANTED, by a respectable middle- aged man, a situation as MANAGER of a small gas-work where the make is from about 3,000,000 to 6,000,000 feet per annum (or as FITTER only). Thoroughly understands the setting of both clay and iron retorts, and has had many years practical experience. Good reference given.
Address H. S. G., 2, Keyfield Terrace, Old London Road, ST. ALBANS.

WANTED, a situation as Gas-fitter or METER-MAKER by a young man of good experience in both departments; also understands pipe-laying. Good character.
Address J. HAMPSON, care of Mr. Nichols, Watchmaker, 35, Hanover Street, ISLINGTON, N.

WANTED, by a gas engineer, a situation as ASSISTANT or MANAGER in a gas-work. Is experienced in the manufacture and distribution of gas, analyses of coal and gas, and keeping of accounts; is also a good draughtsman. Engagement temporary or permanent, as may be desired.
Address A. G. N., care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

AS MANAGER.—An experienced man, with high testimonials, well acquainted with manufacture and distribution of gas and utilization of products, with erection and alteration of apparatus, and with gas-fitting. Is a good accountant.
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MANUFACTURER OF EVERY DESCRIPTION OF GAS APPARATUS,

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These Meters have received the highest praise from many eminent Gas Engineers, for their excellence of manufacture, superiority of workmanship, and accuracy of register. They are warranted to measure correctly and not to vary. Every Meter manufactured by him maintained in perfect repair for a period of *five years*. All bear the Government stamp.

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*** The very best material and workmanship guaranteed, and at prices bearing a favourable comparison with any House in the Kingdom.

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Is introduced to the notice of the above as being more efficient and economical than any yet produced, and possessing the following advantages:—

The glass is easily secured by the Clips instead of putty, which gives freedom for expansion and contraction, thus removing all liability of fracture, and the frame being protected by the Clips, gives a finished appearance to the Lamp, and ensures its durability.

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WANTED, Plans, Specifications, and Estimate for a combined Gas and Steam Cooking Apparatus, to cook for 1000 persons.
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GAS Chandelier (250 to 300 light) wanted for a Ball-room 125 ft. and 35 ft. long by 50 feet high and wide. Also three smaller ones, to match, of 150 to 180 lights each.
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Each has a division in centre, wrought-iron lid, and set of iron sieves. Two wrought-iron Scrubbers, 2 ft. diameter by 10 ft. high, with the necessary pipes for connecting. Hydraulic Main, 10 ft. long 1 ft. diameter, with 8 4-in. dip-pipes; 10 D Mouthpieces, 14-in. by 12-in, with cast-iron lids; 4 4-in. Fourway Cocks; 3 4-in. improved Valves, and all the Connexions for Purifiers and Condensers.
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TWO small Purifiers in good condition, suitable for small works.
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HARRISON VEEVERS, Engineer.
Gas Offices, Bolton, Oct. 22, 1869.

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THE PATENT ANTI-GALVANIC PAINT is guaranteed to prevent and arrest rust on all ironwork, and is specially recommended as the only Paint to effectually preserve Gasholders and Purifiers, being a perfect repellent to the gaseous exhalations, &c., arising therefrom. Sample cans sent free of charge.
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THE PATENT IMPROVED TIN-PLATE DRY METER,

WITH SPECIAL FACILITIES FOR ADJUSTING AND REPAIR,

The principal parts of the mechanism being accessible by the removal of a single screw.

GAS-METERS on the WET and DRY principles made in CAST-IRON and TIN-PLATE CASES.

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Trade Mark. **THE MEDAL FOR 1862.**

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INTERNATIONAL EXHIBITION,
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PRIZE MEDAL
For excellence of Fire-Clay Gas Retorts, and
"HONOURABLE MENTION" for
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(Established 1820,)
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DEPÔT for STOURBRIDGE AND NEWCASTLE FIRE-BRICKS, LUMPS, TILES, and FIRE-CLAY, and every Article suitable for
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All sizes, from ¼ in. to 4 in. diameter and upwards.
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INDIA-RUBBER BAGS for GAS-MAINS.
WASHERS for GAS and STEAM JOINTS.
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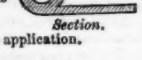
FLANGE TUBING, for excluding Draughts and Dust through WINDOWS, DOORS, and GLASS CASES.



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GAS-FITTINGS,
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Beg to inform Gas and Water Companies and the public, that they keep in stock in London all the CASTINGS in general use in Gas and Water-Works, including Iron Retorts, Socket and Flange Pipes, Bends, Branches, and Syphons of all sizes, Lamp Columns, &c., &c.
N.B.—Orders for Cast-iron Tanks, Girders, Columns, Cylinders, and all irregular castings, will have immediate attention.
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WOOD SIEVES FOR PURIFIERS.
These justly celebrated Sieves, with bevel bars and hard-wood side frames, have been extensively made by Messrs. Walker for over seven years, and their advantages and durability are fully established. Messrs. Walker make them in very large quantities, having mills and machinery specially laid out for them, producing them at the most moderate cost.
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VESTIBULES,
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GAS-FITTINGS OF EVERY DESCRIPTION.
WORKS:
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Special Designs prepared in perfect accordance with architectural arrangements. Estimates furnished for the Lighting and Fitting up of Theatres, Music-Halls, and Public or Private Buildings with Gas.
GAS MOONS OF THE NEWEST DESIGNS.
The Patent Gas-Regulator & Purifier reduced to 6s. 6d. per Dozen.
Pattern Books of Gas-Fittings, Crystal and Ormolu Chandeliers for 1869, are now complete.
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TAR PURCHASED,
In Districts contiguous to the Advertiser's Works.
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Superior Quick-Drying Black Varnish for every description of Ironwork. Sold in barrels of about 36 gallons. Delivered free to any station in England at 1s. 2d. per gallon, cask included.

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SOCKET, FLANGE, HOT-WATER PIPES, AND ALL CONNEXIONS; RETORTS, HYDRAULIC MAIN, LAMP-COLUMNS, &c.; AND EVERY DESCRIPTION OF CASTINGS AND WROUGHT-IRON WORK FOR GAS AND WATER-WORKS, STEAM, AND GENERAL PURPOSES.
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WILLIAM FRASER, Inverkeithing (owner of the Works at which Fire-clay Retorts were first made), having greatly enlarged his works, can supply retorts and other fire-clay goods to any extent.
References can be given to managers of above a hundred Gas-Works whom he supplies.
WILLIAM FRASER ships COWDENBEATH PARROT COALS at Charlestown and Burntisland at 12s. per ton; and HALBEATH STEAM COALS, on Navy List, at 8s. 6d. per ton.

ADDISON POTTER,
WILLINGTON QUAY,
NEAR NEWCASTLE-UPON-TYNE,
Manufacturer of Clay Retorts, Fire-Bricks, and every description of Fire-Clay Good

HOPKINS, GILKES, & CO.,
LIMITED,
MIDDLESBOROUGH,
SUPPLY GAS AND WATER PIPES OF EVERY SIZE,
Plain, Turned and Bored, and Coated.
CAST-IRON RETORTS.
Castings for Gas-Works of every description.
EXHAUSTERS.
LONDON OFFICE: 95, CANNON STREET.

TO GAS ENGINEERS AND FITTERS.
Every Description of
GAS LANTERNS & REFLECTOR LAMPS
For Shop Windows kept in Stock.
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Established 1820.

J. T. B. PORTER & CO.,
GAS ENGINEERS,
MANUFACTURERS AND CONTRACTORS FOR GAS-WORKS
Of any extent at Home and Abroad,
GOWTS BRIDGE WORKS, LINCOLN,
AND
JOHN STREET, ADELPHI, LONDON, W.C.

TANGYE BROTHERS & HOLMAN,

ENGINEERS, MACHINERY AGENTS, AND MANUFACTURERS,

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And BIRMINGHAM (TANGYE BROTHERS), CORNWALL WORKS, SOHO.

SOLE MAKERS OF

MORTON'S PATENT SELF-SEALING RETORT-LIDS.

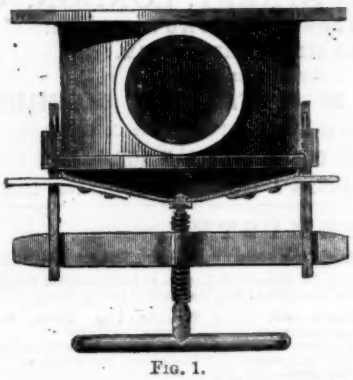

FIG. 1.

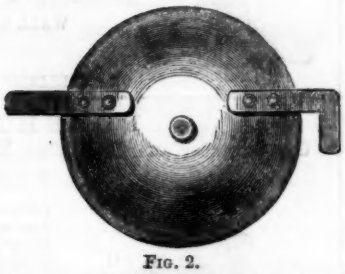

FIG. 2.

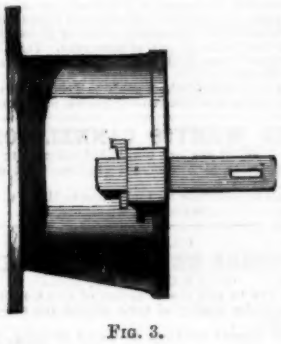

FIG. 3.

Several Hundreds in successful operation in various Gas-Works.

The expensive and cumbersome process of sealing the mouths of Gas-Retorts by means of luting the Lids with lime and other materials hitherto used for that purpose, is henceforth rendered unnecessary, and will be superseded by the very efficient method shown in the accompanying illustrations.

Fig. 1 shows a plan of a mouthpiece with Morton's Patent Lid in section. The mouthpiece is faced true, and the projecting circular edge or periphery of the lid is also turned true, and, by preference, of a semicircular section, so that the point of contact is reduced to a minimum; the convex form of the Lid rigidly sustains the force of the screw, which, by its central action, gives the Lid a uniform bearing, and effectually seals the mouth of the Retort.

Fig. 2 shows a front view of Morton's Patent Lid, which is stamped out of plate iron, having (in this case) ledges to rest on the lugs of the mouthpiece; these Lids, however, are more generally fitted to hinged cross-bars, by which means they remain suspended while the charge is withdrawn and the Retort charged, so that the damage done by throwing them about is entirely prevented.

The advantages obtained are—

1st. The sound sealing of the Retort during the whole time it is carbonizing the charge of coal, there being no jointing medium between the Lid and the mouthpiece.

2nd. The improved condition of the coke by the non-mixture of lime.

3rd. The Lid requires no preparation on the part of the stoker, beyond slightly scraping the surface to remove extraneous grit or dirt.

4th. The Lids are only about two-thirds the weight of the old form in general use, a Lid for a 16-inch mouthpiece weighing a little over 20 lbs.

5th. The Self-sealing Lid reduces labour, saves wear and tear, obviates all the inconvenience and discomfort consequent on the preparation of luting, and effects a great reduction in the working expenses. The cost attending the process of "luting" in several large gas-works, exceeds £1000 per annum, ranging in various works from 20s. to 35s. per mouthpiece.

It will be obvious that a round Lid is the most convenient and the cheapest form. D Retorts are adapted for round Lids, by carrying the bottoms down the necessary depth for that purpose, as shown in Fig 3. Some mouthpieces have been thus adapted, and are in use at the Chartered Gas-Works.

The following testimony speaks in favourable terms after ample and careful test:—

Burslem and Tunstall Gas Company, Longport, Staffordshire, Oct. 12, 1869.

Dear Sir,—In reply to your favour of the 9th inst., I have pleasure in stating that my admiration for your Patent Retort-Lid is most unqualified. I have 14 of them in use, and have tested them in the severest manner possible at these works, but without being able to detect the slightest defect. Yesterday the strap slipped off the exhauster, and a pressure of 13 inches was thus almost instantly thrown upon the Retorts, but although many of the luted Lids were leaking, not the slightest escape was observable from yours. I had anticipated that at least some greater degree of care would have been required in the scraping of the mouthpieces after the drawing of each charge, but even in this particular I find that labour has been reduced.

By every stoker on these works, as well as by myself, your Lids are regarded as a boon.

Please send me 30 more at your earliest convenience.

I am, &c., (Signed) HENRY WOODALL.

R. Morton, Esq.

Chartered Gas Company, Horseferry Road, Westminster, Sept. 15, 1869.

Dear Sir,—I have only lately returned to town, which is the reason I have not replied earlier to your inquiry.

I beg to say that I have had your Lids in use for upwards of two months, and during that time they have always kept a perfectly sound joint. I may add that where your lids are used only one set is required.

I remain, &c., (Signed) G. O. TREWBY.

R. Morton, Esq.

Chartered Gas Company, 146, Goswell Street, E.C., Oct. 20, 1869.

Dear Sir,—I have much pleasure in stating that, after some months trial of your Retort-Lids, I find them everything I could desire. I consider the plan a great improvement.

I am, dear sir, yours truly, (Signed) A. UPWARD.

R. Morton, Esq., London Gas Company.

These Lids are in successful use at the London Gas-Works, the Chartered Gas-Works, the Dublin Gas-Works, the Burslem and other Works, giving great satisfaction.

Application for Licences and other Information to be made to

TANGYE BROS. & HOLMAN, 10, Laurence Pountney Lane, London, E.C.

Sole Makers of Upward's Patent Safety Drilling Apparatus, Weston's Patent Differential Pulley Blocks, the "Special Steam-Pump," the Patent Duplex Lever Punch, &c.

CANNEL COAL.—The West Yorkshire Iron and Coal Company, Limited, beg to draw the attention of Gas Companies to their Cannel, of which the following is the analysis made by W. Huggon, Esq., F.C.S.:—

Yield of gas per ton . . . . 10,296 cubic feet.
Illuminating power rather over 21 sperm candles.
Yield of coke per ton . . . 12 cwt.

The actual working, as reported by one of the largest gas companies in Yorkshire, gives results still more favourable, viz—

Yield of gas. . . . . 10,416 cubic feet.
Illuminating power . . . 21·89 sperm candles.
Coke . . . . . The same.

We add from the same source the capabilities of the common gas coal—

Yield of gas. . . . . 10,080 cubic feet.
Illuminating power . . . 14·41 sperm candles.
Yield of Coke . . . . . 13 cwt.

COLLIERIES—WEST ARDSLEY, near LEEDS.

For further particulars, address to the Office of the Company, 15, York Place, LEEDS.

POPE & PEARSON'S GAS COAL.

We have now the authority of several of the most eminent Gas Engineers of London in stating that our Coal yields *in practical working over* 10,000 *cubic feet of gas, with an illuminating power of* 16 *candles.*

One ton yields 12½ cwt. of good coke. This Coal can be shipped from Hull, Goole, Liverpool, Morecambe, and Barrow.

For further particulars, apply to POPE AND PEARSON, West Riding and Silkstone Collieries, near LEEDS.

OLD WEMYSS CANNEL COAL.—

Yield of gas per ton, 12,896 cubic feet; illuminating power, 31·75 standard candles. Port of shipment, Wemyss.

Analysis and price on application to Mr. WM. CAREY, Manager, Wemyss Colliery, Kirkcaldy, FIFE.

CANNEL COAL.

MESSRS. GRIFFITHS BROTHERS,
COPPA COLLIERY, MOLD,

Beg leave to call the attention of Gas Companies to the superior quality of their Cannel for gas-making purposes.

This Cannel produces in actual working, in iron retorts, 9200 cubic feet of 32-candle gas, and upwards of 11 cwt. of coke, and in clay retorts will produce 11,500 cubic feet of 25·9-candle gas.

Ports of shipment—Birkenhead or Connah's Quay.

Waggons supplied for delivery by railway to any part of England or Wales.

For particulars, prices, and rates of freight, apply to GRIFFITHS BROTHERS, Coppa Colliery, Mold, FLINTSHIRE.

THOMAS CARR & SON,
MANUFACTURERS OF
FIRE-BRICKS, LUMPS, TILES, RETORTS,
&c. &c.
SCOTSWOOD FIRE-BRICK WORKS,
NEAR
BLAYDON-ON-TYNE.

THOMAS EDINGTON & SONS,
PHŒNIX IRON-WORKS,
GLASGOW,
Manufacturers of all kinds of
GAS AND WATER PIPES,
Branches, Bends, Water-Traps, Tank-Plates, Valves, and general Castings. Also
RAILWAY CHAIRS & SLEEPERS,
AND
GRIFFIN'S PATENT PERMANENT WAY.
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OXIDE OF IRON,
We are prepared to supply, on moderate terms,
HYDRATED PEROXIDE OF IRON (BOG OCHRE),
Same quality as supplied by us to several of the most extensive Gas Companies, and which has given entire satisfaction.
FRANCIS RITCHIE & SONS,
BELFAST.

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Manufactory for every description of Casting and Machinery for Gas-Works and Water-Works.
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ARDWICK IRON-WORKS,
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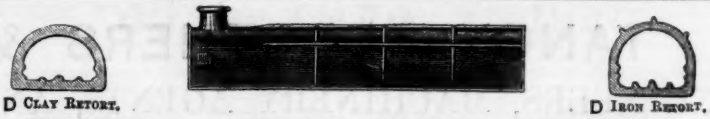

D CLAY RETORT. D IRON RETORT.

FRASER'S PATENT RIBBED RETORTS.

The IRON RIBBED RETORTS are more durable than plain castings, and retain their original shape to the last.

The "Ribs" strengthen the FIRE-CLAY RETORTS, and by affording an increased heating surface favour the more speedy and perfect carbonization of the Coals.

These Retorts are now in use at some of the London works, and in a great number of the provincial gas-works.

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A. C. FRASER, GAS-WORKS, COLCHESTER.

F. & C. OSLER,
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MANUFACTORY AND SHOW-ROOMS:
BROAD STREET, BIRMINGHAM.
ESTABLISHED 1807.
MANUFACTURERS OF CRYSTAL GLASS CHANDELIERS,
WALL LIGHTS, & LUSTRES FOR GAS & CANDLES,
TABLE GLASS OF ALL KINDS.
CHANDELIERS IN BRONZE & ORMOLU. MODERATOR LAMPS.

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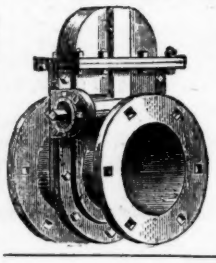

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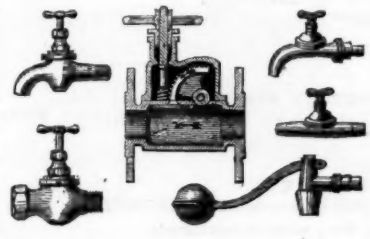

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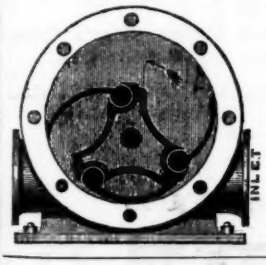

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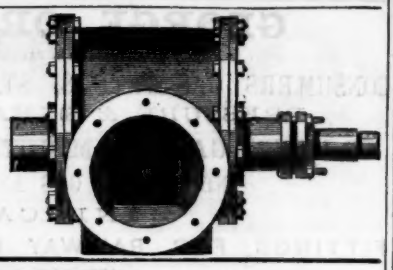

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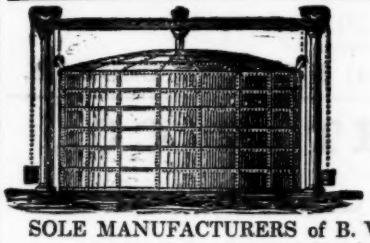

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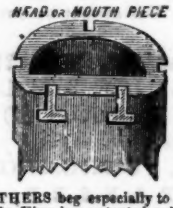

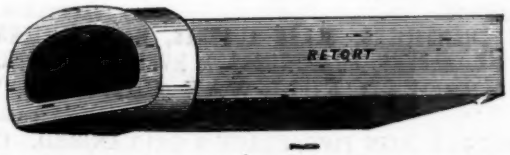

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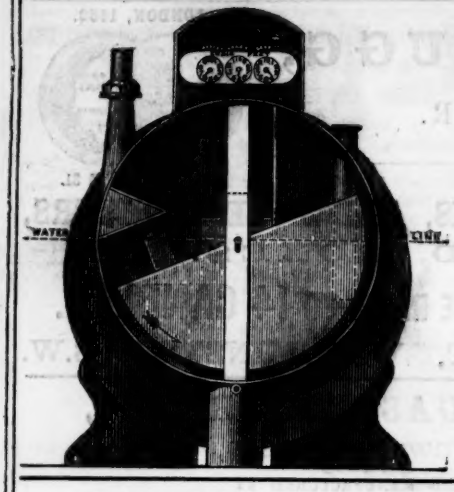

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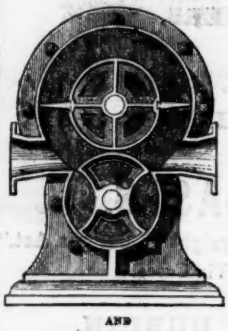

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